

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

5 <400> PreSequenceString :  
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ctccaggccg cccgatgtcac tatcactgtt aatggctcgg tagtcgctaa accctgcact 120  
attcaaacca aagaagctaa cgttaatctc ggggatcttt atacgcgcaa tctgcaacaa 180  
cctgggttctg catctggctg gcacaatatt actttgtcat taaccgattg tccggctgaa 240  
10 acaagtgcag tgacggcaat cgtgacaggt tcaactgaca atacgggtta ttacaaaaat 300  
gaagggtactg ccgaaaaatat tcagatagag cttagggatg accaggatgc gacgttaaaa 360  
aatggcgata gcaaaacggg tattgttgat gagatcactc gtaatgcaca gtttccactt 420  
aaggcaagag ctatcacggg gaatggaaac gcaagccagg gaacgatcga ggcgctaatac 480  
aatgtgatct acacctggca ataa 504

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 504

SequenceName : SEQ ID 431

SequenceDescription :

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

20 <400> PreSequenceString :  
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25 tctaccgaga ctttatcggt tactcctgac aacataaatg cggacattag tcttggaact 120  
ctgagcggaa aaacaaaaga gcgtgtttat ctagccgaag aaggaggccg aaaagtcagt 180  
caactcgact ggaaattcaa taacgctgca attattaaag gtgcaattaa ttgggatttg 240  
atgccccaga tatctatcgg ggctgctggc tggacaactc tcggcagccg aggtggcaat 300  
atggctgatc aggactggat ggattccagt aaccccggaa cctggacgga tgaaagtaga 360  
30 caccctgata cacaactcaa ttatgccaac gaatttgatc tgaatatcaa aggtggctc 420  
ctcaacgaac ccaattaccg cctgggactc atggccggat atcaggaaag ccgttatagc 480  
tttacagcca gaggtggttc ctatatctac agttctgagg agggattcag agatgatatac 540  
ggctccttcc cgaatggaga aagagcaatc ggctacaaac aacgttttaa aatgccctac 600  
attggcttga ctggaagtta tcgttatgaa gattttgagc taggtggcac atttaaatac 660  
35 agcggctggg tggaagcatc tgataacgat gaggactatg acccaggaaa aagaatcact 720  
tatcgagta aagtcaaaaga ccaaaattac tattctgttt cagtcaatgc aggttattac 780  
gtaacaccta acgcaaaagt ttatgttgaa ggcacatgga atcgggttac gaataaaaaa 840  
ggtaataactt catcttatga tcacaatgat aacacttcag actacagcaa aaatggtgca 900  
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 954

SequenceName : SEQ ID 432

SequenceDescription :

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

45 <400> PreSequenceString :  
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atcgtgatgt tggtatcggg tggactgctt ttggcgggct gttcgggtag caaatcatcc 120  
gatacaggaa cgtattccgg ctccgtttac accgtgaaac ggggggatac gctatatcgt 180  
atttcgcgca ccacgggaac cagcgtaaaa gagctggcgc gactgaacgg catttcccc 240  
ccttacacca ttgaagttgg tcagaaacta aaactgggtg gggcgaaaag tagcagtagt 300  
55 acacgtaaat caaccgcaa atcaacgacc aaaaccgcat cggttacacc gtcacagcg 360  
gtaccgaaat cttcctggcc gccagtaggg caacgttggt ggttatggcc aacgacaggg 420  
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ccacggggta caoctattta cgccgcggtt gcaggaaagg tgggtgatgt gggcaaccag 540  
ctgcgtggct acggtaatct catcatgatt aaacacagtg aagattacat tacggcttac 600  
60 gcccataatg acacgatgct ggtaataaat gggcaaaagc tgaaggctgg gcaaaaaatc 660  
gccaccatgg ggagcacgga tgcggcatct gttcgctgc atttccagat tcgttaccgt 720  
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 780

SequenceName : SEQ ID 433

SequenceDescription :

## Sequence

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5 <213> OrganismName : Escherichia coli O157:H7  
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 aaggtttaaag acctgacgcc cggcgaaactg accgctgagt cctatgacga cagttatctc 180  
 gatgatgaag atgcggactg ggccgcgacc ggacaggggc agaaatccgc tggagatacc 240  
 10 agcttcacgc tggcgtggat gcccgagag caggggcagc aggcgctgct ggctgtgttt 300  
 aatgaagggtg ataccctgac ctataaaatc cgcttccga acggcacggt cgatgtgttc 360  
 cgccgctggg tcagcagtat cggtaaggcg gtgacggcga aggaagtgat caccgcacg 420  
 gtgaaagtca ccaacgtggg acgtccgtcg atggcagaag atcgacgac ggtaacacg 480  
 gcaaccggca tgaccgtgac gcctgccagc acctcggtgg tgaaagggca gagcacgacg 540  
 15 ctgaccgtgg cattccagcc ggaaggcgca accgacaaga gcttccgtgc ggtgtctgcg 600  
 gataaaacaa aagccaccgt gtccgtcagt ggtatgacca tcaccgtgaa aggtgtgtct 660  
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 <212> Type : DNA  
 20 <211> Length : 741  
 SequenceName : SEQ ID 434  
 SequenceDescription :

## Sequence

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25 <213> OrganismName : Escherichia coli O157:H7  
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 actgtgtaaa ctatggataa ggcggaatat ctgcccctgg actgcacat caaggaagt 120  
 30 cagttcacgc ccgggcagaa acaggatatt gatgtgacca cgctctgctc cacagagcag 180  
 gagaacatca atggtctggg ggctcgtct gagatttcca tgcgggcaa tttttatctg 240  
 aatcaggccc agaaccgct gcgtgatgcc tatgacaatg acgcgttgta tgcgtttaag 300  
 gtgctgtttc cgctccgtaa gggctttaa ttcctggcgg aagtgcgcca gcacacctgg 360  
 tcattccgta ccaacggcgt ggtggctgca acgttctcac tgcgtctgaa aggcaaaccg 420  
 35 gtgtcctttg tggtaaccgt ggctgtttgt aaaaatctgg ataagacact taccgtgaat 480  
 accggtgcgc tgcgtacaat gtcagtcagt gccaacgggg gaacgcccgt gtataaatac 540  
 gcctggaaga aggatggtca gccggttgac gggcagacga cagacacctt cagtaagcca 600  
 ggtgcgcagt ccgctgatgc ggggaaatat acctgtgtgg tgaccgatcc ggagagaaa 660  
 gcacagagtg tgacgtctgt tgaatgcacc gtgacagtga gcgcagccgc cggataa 717  
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 <212> Type : DNA  
 <211> Length : 717  
 SequenceName : SEQ ID 435  
 SequenceDescription :

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45 <213> OrganismName : Escherichia coli O157:H7  
 <400> PreSequenceString :  
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 gccgcagaaa tatataacaa agacggtaat aaactggatg tctatggcaa agttaaagcc 120  
 atgcattata tgagtgataa cgacagtaaa gatggcgacc agagttatat ccgttttggg 180  
 tttaaaggcg aaacacaaat taacgatcaa ctgactgggt atggctcgtt ggaagcggag 240  
 tttgcccga ataaagcgga gagtatact gcacagcaaa aaacgcgtct cgcttttggc 300  
 55 ggattgaagt ataaagattt gggttctttc gactatggcc gtaacctggg cgcgttgtat 360  
 gacgtggaag cctggaccga tatgttcccg gaatttgggt gcgactcctc ggccgagacc 420  
 gacaacttta tgaccaaacg cgccagcggg ctggcgacgt atcggaacac cgactttctc 480  
 ggctgttatcg atggcctgaa cttaacctcg caatatcaag ggaaaaacga aaaccgcgac 540  
 gttaaaaagc aaaacggcga tggcttcggc acgtcattga catatgactt tggcggcagc 600  
 60 gatttcgcca ttagtggggc ctataccaac tcagatcgca ccaacgagca gaacctgcaa 660  
 agccgtggca caggcaagcg tgcagaagct tgggctacag gtctgaaata cgatgccaat 720  
 aatatttatc tggcaacttt ttattctgaa acacgcaaaa tgacgccaat aactggcggc 780  
 tttgccata agacacagaa ctttgaagcg gtcgctcaat accagtttga ctttggctctg 840  
 cgtccatcgc tgggttatgt cttatcgaaa gggaaagata ttgaaggtat cggatgatgaa 900  
 65 gatctgggtc attatatcga tgcggggct acatattatt tcaacaaaaa tatgtcagcg 960  
 tttgttgatt ataaaatcaa ccaactggat agcgataaca aattgaatat taataatgat 1020  
 gatattgtcg cggttggcat gacctatcag ttttaa 1056

<212> Type : DNA  
<211> Length : 1056  
SequenceName : SEQ ID 436  
SequenceDescription :  
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<213> OrganismName : Escherichia coli O157:H7  
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ttattaaata gcgctcaggg ccaaaactct tataaagatc cgagctataa cgatgacttt 180  
ggtattgaaa caccctcagc gttagataac tttactcagg ccatccagtc acaaatttta 240  
ggtggggtac tgtcgaatat taataccggg aaaccggggc gcatggtgac caacgattat 300  
15 attggttgata ttgctaaccg cgatgggtcaa ttgcagttga acgtgacaga tcgtaaaacc 360  
ggacaaacct cgaccatcca ggtttcgggt ttacaaaata actcaaccga tttttaa 417  
  
<212> Type : DNA  
<211> Length : 417  
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SequenceDescription :  
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25 <213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
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ctgcactact tctctgatga tgctagcagc gatggcgaca tgcatatgc ccgtatcggt 180  
30 ttcaaagggtg aaactcagat cgctgaccaa ttcactgggt atggtcagtg ggaatttaac 240  
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gacgtagaag catggaccga tatgctgccg gaatttggtg gagataccta tgctggcgct 420  
gacaacttca tgaacgggtc tgctaacagc gtagcaacct atcgtaacaa tggttttctt 480  
35 ggtcaagttg atgggtctgaa ctttgcactc cagtatcagg gtaacaacga gaaaagcgga 540  
ttatttgatc aagaagggtc aggtaacggg aatggacgta aacttgctaa agagaacggc 600  
gacgggtcag tatgtccact tcctatgact ttgactttgg ttttaa 645  
<212> Type : DNA  
<211> Length : 645  
40 SequenceName : SEQ ID 438  
SequenceDescription :  
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45 <213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
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caacttcacg atggtacggt gaataacagc ggtattgctg cggcgcgctg taacgctcag 180  
50 ggcgatgcgg tattcaataa ccttgcaggg ggcgagggcg gtaaaaggcg gattctctat 240  
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aatgccggga cgctggatat tgacgataag tcaacggtca acaacagcgg caaactcatc 360  
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55 ggcgccagcg agtttattaa caaggcgctg gtggatgcga aagtcaccgt ggcggtagt 540  
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60 actggtatgc aactggatgc caatgccacc gccgatgcgg taattgagaa caacggcacg 840  
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5  gtggaaggca tcaacctgac cgacgccgat gccatcacct caacgtccgt ggtatggacc 1320
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   aagggcggtg gtatcaacag cctggcgagc gtccggcgta agtacagtag caaagaaagt 2340
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20 ctgaacttta agaaaacggt ctaa 2424

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<212> Type : DNA

<211> Length : 2424

SequenceName : SEQ ID 439

SequenceDescription :

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Sequence

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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   actccggtga aagttcattc ccttttttct ccaggctcgt cgaatgttaa tgcgagaacg 180
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35  aaagagcact tggctgccta tgaataatcg aaaggctcct aggccttagg ttttaagccc 360
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   ccgcccattg cacaggcatt aaaagagcac ttggctgcct atgaaaaatc gaaaggctct 480
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   tccggggcat cccgaccttt accgcccatt gcacaggcat taaaagagca cttggctgcc 600
40  tatgaaaaat cgaaaggctc tgaggcttta ggttttaagc ccgcccgtca ggcaccaccg 660
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<212> Type : DNA

<211> Length : 747

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SequenceName : SEQ ID 440

SequenceDescription :

Sequence

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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   gccagcgaga acttacaggc gcctggcggt tcgacctatca ccgcagatga aatccgcaaa 180
55  aaccccggtt cccgcgatgt ttcggagatc atccgtacca tgccaggcgt taacctgacc 240
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   gatgaaccca accgcctgta tcgccagaac tactcgctga cctggaacgg tggctgggat 960

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aacggcgtga ccaccagcaa ctgggtgcag tacgaacaca cccgtaactc gcgtattccg 1020
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15 atgtggacta ataacatcac ttatatgctg aagagtgaac acaaaaccac gggcgaccgt 1860
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20 ttcgacaac gtttgtggcg tgcgggtaat gccagacca cggcgattt ggaggggcc 2160
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<212> Type : DNA

<211> Length : 2241

25       SequenceName : SEQ ID 441  
      SequenceDescription :

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30 <213> OrganismName : Escherichia coli O157:H7
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aaaaccacaaa ttgttaaagg caaaactaca aaacaggagc tggttagcatc gttcggtgaa 180
35 cctgacagcc gttctttgat cgtgggtgaa gaacaatggt catacactat gtataacagc 240
cagtcacaaag caactctttt catccccgtt gtgggactgc ttgcaggttg cgcagactca 300
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40 <212> Type : DNA
<211> Length : 396
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      SequenceDescription :
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tccgtagctg cgacttctac cgtaactggc ggttacgcac agagcgacgc tcaggggcaa 120
50 atgaacaaaa tggcggtttt caacctgaaa taccgctatg aagaagacaa cagcccgctg 180
ggtgtgatcg gttcattcac ttacaccgag aaaagccgta ctgcaagctc tggtgactac 240
aacaaaaacc agtactacgg catcactgct ggtccggctt accgcattaa cgactgggca 300
agcatctacg gtgtagtggg tgtgggttat ggtaaattcc agaccactga ataccggacc 360
tacaaacacg acaccagcga ctacggtttc tctacgggtg ctgggtctgca gttcaacccg 420
55 atggaaaacg ttgctctgga cttctcttac gacgagagcc gtattcgtag cgttgacgta 480
ggcacctgga ttgccggtgt tggttaccgc ttctaa 516
60 <212> Type : DNA
<211> Length : 516
      SequenceName : SEQ ID 443
      SequenceDescription :
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Sequence

-----

```
65 <213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atgaagagta tagcaacact agttgtgtgt gcaatctccg ggattgcctg tgtaaattta 60
tctgcacatg cagcagaagg agagcatata atttctcttg ggtatgcgca ctttcagttt 120
```

```

ccgggactga aggattttgt aaaggatgcg actgctcata acagggagac tttcagtcac 180
ttcgtcaaca gaaactactt ttcttcattg ggcgaaatata cagatgggtcg ggtcagtgga 240
tatgaaggca aggataaaaa tccacagggc attaatatca ggtatcgcta cgagataacg 300
gatgattttg gcgttatcac ctcttttaca tggacgcgtt ctctcactaa ctccacagaca 360
5 tttattgatg tgcagtacgc cgatcatacc aggaagatta agaatccggc agcttctgcc 420
agaacggata tcaggcgcaa ttactggagt ctgttagcgg ggcccttcag gcgggttaat 480
cagtacatga gtttatatgc gatggcaggg atgggcggtg ctaaagttag cgctgacctg 540
aaaattaagg acaatattaa cagtagtggc ggattttctg aaagcaacag cacgaaaaaa 600
acctcccttg cgtgggctgc aggtgcacag tttaacctga atgagagtgt tacactggat 660
10 gtggcttacg aaggttccgg ctctggcgac tggcgcacga gtggcggtac tgctggcatt 720
ggcctgaaat tctga 735

```

<212> Type : DNA

<211> Length : 735

SequenceName : SEQ ID 444

15 SequenceDescription :

Sequence

-----

<213> OrganismName : Escherichia coli O157:H7

20 <400> PreSequenceString :

```

atgcgtaaac tttatgccgc cattttgtcc gcagccattt gtctgaccgt atccgggtgcg 60
cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgtctcgacg 120
aacgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaattcacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaggaatcg ccagattacc 240
25 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc gggagtggct 360
tacagccgtg tgtcgacttt ctccggggat tatctccggt taactgacaa caaggggaaa 420
acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
30 tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

```

<212> Type : DNA

<211> Length : 600

SequenceName : SEQ ID 445

35 SequenceDescription :

Sequence

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<213> OrganismName : Escherichia coli O157:H7

40 <400> PreSequenceString :

```

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cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccgacg 120
agcgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaatttacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
45 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc ggggtgtggct 360
tacagccgtg tgtcgacttt ctccggggat tatcttcggt taactgacaa caaggggaaa 420
acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
50 tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

```

<212> Type : DNA

<211> Length : 600

SequenceName : SEQ ID 446

55 SequenceDescription :

Sequence

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<213> OrganismName : Escherichia coli O157:H7

60 <400> PreSequenceString :

```

atgcgtaaac tttatgccgc cattttgtcc gcagccatct gtctggccgt atccggcgcg 60
cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccgacg 120
agcgctcccc gtagcgataa tcttaacggg attaacgtga aataccgtta tgaatttacg 180
gacacgctgg ggctggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
65 cgttacagcg ataccgcgtg gcatgaagat tccgtgcgta accgctgggt cagcgtaatg 300
gcggggccgt ctgtgcgcgt gaatgaatgg ttcagcgcgt atgcgatggc ggggtgtggct 360
tacagccgtg tgtcgacttt ctccggggat tatcttcggt taactgacaa caaggggaaa 420

```

```

acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

5  <212> Type : DNA
    <211> Length : 600
        SequenceName : SEQ ID 447
        SequenceDescription :

10  Sequence
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    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
15  atgcgtaaac tttatgccgc cattttgtcc gcagccatct gtctggccgt atccggcgcg 60
    cctgcatggg cgtctgagca gcaggccacg ctgagcgcgg ggtatcttca tgcccggacg 120
    agcgctcccc gtacgcataa tcttaacggg attaacgtga aataccgtta tgaatttacg 180
    gacacgctgg ggctgggtgac gtcattcagc tatgcaggag acaagaatcg ccagcttacc 240
    cgttacagcg ataccgcgct gcatgaagat tccggttcgta accgctgggt cagcgtaatg 300
    gcgggggcgt ctgtgcgcggt gaatgaatgg ttcagcgcggt atgcgatggc ggggtgtggct 360
20  tacagccgtg tgctgacttt ctccggggat tatcttcgcg taactgacaa caaggggaaa 420
    acgcacgatg tgctgaccgg aagtgatgac ggtcgccaca gcaacacgtc tctggcgtgg 480
    ggggctggcg tgcagtttaa cccgaccgaa tccgtggcca ttgatattgc ttatgaaggc 540
    tccggcagtg gcgactggcg cactgacggt ttcacgtggt gtgtcggtta taagttctga 600

25  <212> Type : DNA
    <211> Length : 600
        SequenceName : SEQ ID 448
        SequenceDescription :

30  Sequence
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    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
35  atggtcatga gccagaaaac cctgtttaca aagtctgtct tcgcagtcgc agtggcactt 60
    atctccaccc aggcctggtc ggcaggtctt cagttaaacg aattttcttc ctctggcctg 120
    ggcggggctt attcagggga aggcgcaatt gccgatgatg caggtaacgt cagccgtaac 180
    cccgcattga tgacctatgt tgaccgcccg acattttctg cgggtgcggt ttatattgac 240
    ccggtatgaa atatcagcgg aacgtctcca tctggtcgta gcctgaaagc cgataaacatc 300
    gcgcctacgg catgggttcc gaacatgcac tttgttgac cgattaacga ccaatttggt 360
40  tggggcgctt ctattacctc taactatggc ctggcaacag agtttaacga tacttatgca 420
    ggcgggtctg tcgggggtac aaccgacctt gaaaccatga acctgaactt aagcgggtgcg 480
    tatcgcttaa ataatgcatg gagctttggt cttggtttca acgcgctcta cgctcgcgcg 540
    aaaattgaac gtttcgcagg cgatctgggg cagctgggtg ctggtcagat tatgcaatct 600
    cctgcgggga agactcctca agggcaagca ttggcagcta ccgccaacgg tatcgacagt 660
45  aataccaaaa tcgctcatct gaacggcaac cagtggggct ttggatggaa cgccgggtatc 720
    ctgtatgaac tggataaaaa taaccgctat gcactgacct acggttctga agtgaaaatt 780
    gacttcaaag gtaactacag cagcgatctt aatcgtgtgt ttaataacta cggtttgcca 840
    attcctaccg ccacaggtgg cgcaacgcaa tcgggttatc tgacgctgaa cctgcctgaa 900
    atgtgggaag tgtcgggtta taaccgtggt gatccgcagt gggcgattca ctatagcctg 960
50  gcttacacca gctggagtca gttccagcag ctgaaagcga cctcaaccag tggcgacacg 1020
    ctgttccaga aacatgaagg ctttaaagat gcttaccgca tcgcgttggg taccacttat 1080
    tactacgatg ataactggac cttccgtacc ggtatcgctt ttgatgacag ccaggttccg 1140
    gcacagaatc gttctatctc cattccggac caggaccggt tctggctgag tgcaggtacg 1200
    acttacgcgt ttaataaaga tgcttcagtc gacgttggtg tttcttatat gcacggtcag 1260
55  agcgtgaaaa ttaacgaagg cccataccag ttcgagtcgt aaggtaaagc ctggctgttc 1320
    ggtactaact ttaactacgc gttctga 1347
    <212> Type : DNA
    <211> Length : 1347
        SequenceName : SEQ ID 449
        SequenceDescription :

60  Sequence
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    <213> OrganismName : Escherichia coli O157:H7
    <400> PreSequenceString :
65  atggcctttt ctcaagcggg tagcggatta aacgctgccg ccaccaacct cgatgttatt 60
    ggcaacaata tcgcctaact cgccacctac ggctttaaat caggcacggc ctcttttgcc 120

```

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gatatgtttg cccggttcgaa agtgggactg ggggtaaaag ttgccgggtat cactcaggac 180
tttaccgatg gcaacgaccac caacaccggg cgtggtctgg acgttgctat cagccagaac 240
gggtttttcc gtctggtaga tagcaacggg tccggtgtct acagccgtaa cggacaattt 300
aagctgggatg aaaatcgtaa cctggtgaat atgcaagggt tacagctgac gggttaccgg 360
5 gcaaccggta cgcgcgcgac tattcagcaa ggggcgaatc cgactaacat ttcgatcccg 420
aataccctga tggcagcgaa aactaccacc acggcgctga tgcagatcaa cctgaattcc 480
agcgtaccgc ttccctctgt taacgcattt gatgccagca atgcggatag ctataacaaa 540
aaagggttcgg tgaactgtttt cgacagtcag ggtaattgctc atgacatgag cgtctacttt 600
gtgaagaccg gggataataa ctggcaggtc tacaccagg atagcagtga tccaacagg 660
10 acagccgagc ctgcaatgaa gctgggtgtt aatgccaatg gcgttctgac ctcaaattcc 720
acagagaata ttaccaccgg cgaattaac ggcgcagaa cgcgccaggt tagcctgagc 780
ttcctcaact ccatgcagca aaataccggc gctaacaaca ttgtggcaac caccagaat 840
ggctacaaac cgggcgatct ggtgagttat caaatcaatg atgacgggtac ggttgtcggc 900
aactattcca acgaacaaac ccaactgctg gggcagattg tactggcgaa ctttgccaac 960
15 aacgaaggct tggcatccga aggcgacaac gtctggtctg cgacgcaatc ttctggcgtg 1020
gcgctggttg ggacagccgg gacgggcaac tttggcacc tgaccaacgg tgcgttgga 1080
gcgtccaacg tcgatctcag taaagaactg gtcaatatga tcgttgccca gcgtaactat 1140
cagtctaacg cccagaccat caaaacccag gaccagatcc tcaacacgct ggttaactta 1200
cgctaa 1206
20 <212> Type : DNA
    <211> Length : 1206
        SequenceName : SEQ ID 450
        SequenceDescription :

25 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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30 caatcatccg ctggggctaa ctgtacaaac acacagatag gtcaaaactga agatgggtcgg 120
acagcgctta ttgagttcgg aaaaattaat atgaccgaca cctattttgc gccagcagg 180
tactcctcgc cgacaacggg cgtacctccc actaactaca catcagggtg cgcgacagga 240
agctccgtat tgtgggaatg tgatgcaaca gatttgccaa acatctattt tctggctcgt 300
acaaatggcg acgaccgcgt ggggggcttt tacgatgcag gcgggcctga tggctctgag 360
35 gatgtctatg ccacctgggt cgctttttgtc ggtctcaagc agaccatggc gggcgtgacg 420
cttggctcgt actggaagaa agtgcccac accagttatg ccactcaggg aactaaaatc 480
cagattcgct tacaggatat cctcctctt catgctgagc tttatcgcat cagtacgcta 540
cctgatcatc cagcaacaac aagttggtgc ggtaataata atacagatag tagtggagtc 600
ggattcgcaa aaccttcggg tacaatctat aactgtgttc agcccaatgc ctatattcag 660
40 ctttcgggta ccagcggcat tttatttggt catgatgagc cgcgcgaaga tagttctggt 720
cattgggatt tctggggtgc tgataatggt tttggttacg gaatgcgttc ggccaatcga 780
ctctacaaca atgccacctg cgttgccgc agcgcacgc cgtagtatt gctgccgaca 840
attgcagaag cacaactgaa tgcgggcatg gaaagtaccg gtaattttaa tgtccgcgtc 900
gagtgtagta actcgggtca atcagggatt agcgatactc agacagcatt aggaatccag 960
45 gtgtctgaag gtgcatatac agcggcgcaa aaactgggga ttatcaatag caacggcggc 1020
gtcagcgccc tggctctgta taattatgac gcagcagaga tggcaaaggc cgttggggtc 1080
tacatttcta acagtgtcga ccccgatacg gcgatgacgc tgggttggtca accgggcatc 1140
gcgaagttaa ccccgagg aaatgcagcg ggggtggtatc ctgtatttga aggggcaaca 1200
ttagaagggt cgactcacc cggatactcc agctatagtt actcttttat cgcccggttg 1260
50 aagaaactgc caaatcagac agtcagtgcg ggaaaagtgc gggcaacggc ttatatattg 1320
gtgaaaatgc aatga 1335
<212> Type : DNA
<211> Length : 1335
    SequenceName : SEQ ID 451
    SequenceDescription :

55 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atggaaaaca atcgcaattt ccctgccaga caatttcatt cgctcacgtt ctttgccgg 60
ctttgtattg gcatcacgcc tgtggctcag gcaactcgcc ccgaagggca aactaacgcg 120
gatgacacgc tgggtgtcga agcatcaacg ccttcgcttt atgcgccaca acaatctgcc 180
gatccgaaat tctcgcgctc ggtagcggat actaccgcga cgatgacggg gatttctgaa 240
65 caagtgatta aagatcaggg gcgaaccaac cttaccgatg cgctcaaaaa cgtccccggc 300
gtgggtgcgt tttttcggg tgagaacggg aactccacca ctggcgacgc catttatatg 360
cgcggtgctg atacctctaa cagtatttat attgatggca ttcgcgatat cggcagcgtc 420

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5  tgcgcgcgaca ccttcaatac tgagcaggtc gaagtgatta aagggccttc cggcaccgac 480
   tacggggcgca gcgcgcgcgac gggctcgatc aatatgatca gcaagcagcc gcgcaatgat 540
   tccggcattg acgcctccgc cagtattggc agcgccctgg tccgcgcgcg cagcctggac 600
   gtcaatcagg tcatgtgtga taccactgcg gtgcgcctga atgtgatggg cgaaaaaacg 660
   cagcatgccc gacgcgacaa agtcaaaaaat gagcggttac ggcgcgcccc ttctatcgct 720
   tttggccttg gtacagcgaa tcgtttgtat ctttaattatc tgcatgtcac ccagcacaa 780
   acgccagacg gcggcattcc aaccatcggg ttgcggggct attctgcccc atctgcagga 840
   acggcgaccc tgaatcattc cggaaaagtt gatacgcata acttttacgg caccgattcc 900
   gattacgacg attcgaccac cgacaccgcc accatcggtt ttgagcacga tatcaacgat 960
10 aacaccacca ttcgcaacac taccggttgg acgcgcgtga agcaggatta cctgatgacg 1020
   gcgattatgg gtggggcgctc gaattattacc cagcccacca gcgatgtgaa tagctggacg 1080
   tggtcacgca cggcgcaatac caaagatgtg agtaataaaa ttctcaccaa ccagaccaac 1140
   ctgacctcga cattctatac cgcttctatc ggtcatgatg tcagtaccgg cgtggaattt 1200
   acccgtagaaa ccgacgctaa ctacggcggt aatccggtga cgttacctgc ggtaaatatt 1260
15 tatcatcctg acagcagcat tcatcccggc ggcctgacgc gcaacggcgc aaacgccaat 1320
   ggtcagacgg ataccttcgc aatttacgca ttcgatacgc tgcaaatcac cctgatgttt 1380
   gagctgaacg cggggatccg tctggataat tatcatactg aatatgacag tggcaccgcc 1440
   tgcggcgcca gcggacgcgg tgccatcacc tgcgcagctg gtgtggcaaa aggttctccg 1500
   gtcaccaccg tcgacaccgc caagtccggc aatctgggtg actggaaagc cggggcgctg 1560
20 tatcacctga cggaaaaacg caatgtctat attaactatg ccgtttccca gcagcctccg 1620
   ggcggcaaca acttcgcctc tgcgcagctc ggcagcggta acagtgccaa ccgcaccgat 1680
   tttaaaacgc aaaaagctaa caccagcgag attgccacca aatggcaggt tctggataaa 1740
   cgctgtttgc tcaccgcgcg gctgttccgt actgatatcg aaaatgaagt tgagcaaaat 1800
   gatgacggga ctactcgca atacggtaag aaacgcgctc aaggctatga gatatccgtg 1860
25 gcagggaata tcactccgcg gtggcaggtg attggcggct ataccagca aaaagcaacc 1920
   atcaaaaacg gcaaaagtgt tgcccaggat ggttccctat cgctgccgta taccgccgag 1980
   cagccttcca ccttatggag ccaatatcag gcaaccgatg atatctctgt tggcgcgggc 2040
   gcacgctata tcggcagtat gcataaaggt tcagacggcg cgggtgggaac gccagcgttt 2100
   accgaaggtt actgggtcgc cgatgcacaa ctgggggtata ggggttaatc caatctcgac 2160
30 ttccagctaa acgtctacaa cctgtttgat accgattacg tcgcctcaat caataagagc 2220
   ggctaccggt atcaccggcg cgagccaaga accttcttgc tcacagccaa tatgcatttc 2280
   tga

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2283

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35  SequenceName : SEQ ID 452
     SequenceDescription :

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## Sequence

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40  <213> OrganismName : Escherichia coli O157:H7
     <400> PreSequenceString :
   atgcaaatga agaaattgct cccattctt atcggcctga gcctttctgg gttcagttcg 60
   ttgagccagg ccgagaacct gatgcaagtt tatcagcaag cagccttag taaccggaa 120
   ttgcgtaagt ctgcgcgcga tcgtgatgtc gcctttgaaa aaattaatga agcgcgcagt 180
45  ccattactgc cacagctagg tttaggtgca gattacacct atagcaacgg ctaccgcgac 240
   gcgaacggca tcaactctaa cgcgaccagt gcgtccctgc agttaaactca atccattttt 300
   gatattgtcga aatggcgtgc gttaacgctg caggaaaaag cagcagggat tcaggacgtc 360
   acgtatcaga ccgatcagca aaccttgatc ctcaacaccc cgaccgctta tttcaacgtg 420
   ttgaatgcta ttgacgttct ttctataca caggcgcaaa aagaagcgat ctaccgtcaa 480
50  ttagatcaaa ccacccaacg ttttaacgtg ggctggtag cgatcaccca cgtgcagaac 540
   gcccgcgcg agtacgatac cgtgctggcg aacgaagtga ccgcacgtaa taaccttgat 600
   aacgcggtag agcagctgcg ccagatcacc ggtaactact atccggaact ggcggcgctg 660
   aatgtcgaaa actttaaaac cgacaaacca cagccggtta acgcgctgct gaaagaagcc 720
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55  attcgccagg cgcaggatgg tcaattaccg actctggatt taacggcttc tagcgggatt 840
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   agcaatatgg gccagaacaa agttggcctg tacaactttg ttggtgccag cgagcaactg 1020
   atggtttaact cgcaggtgaa acaggcacag gtacgttctt ctttcaacaa cattaatgct 1080
60  tctatcagta gtattaacgc ctacaaacaa gccgtagttt ccgctcaaaag ctcatagac 1140
   gcgatggaag cgggctactc ggtcggtagc cgtaccattg ttgatgtgtt ggatgcgacc 1200
   accacgctgt acaacgcgca gcaagagctg gcgaatgcgc gttataacta cctgattaat 1260
   cagctgaata ttaagtcagc cctgggtacg ttgaacgagc aggatctgct ggcactgaac 1320
   aatgcgctga gcaaacgggt ttccactaat ccggaacacg ttgccccgca aacgcgggaa 1380
65  cagaatgcta ttgctgatgg ttatgcgcct gatagcccg caccctcgtt tcagcaaaac 1440
   tccgcacgca ctaccaccag taacggtcat aaccctttcc gtaactga 1488

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&lt;212&gt; Type : DNA

<211> Length : 1488  
SequenceName : SEQ ID 453  
SequenceDescription :

## 5 Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

gtgaccaaac	tcaaaccttct	ggcacttgga	gtgcttatcg	caacgtctgc	agggcgtagcg	60
cacgctgaag	gtaaatatttc	cctgggcgca	ggcgtagggtg	tcgttgaaca	cccatataaaa	120
gattacgata	ccgatgttta	cccagtagcg	gtaatcaact	atgaaggcga	taactttctgg	180
ttccgtgggt	taggtgggtg	ttactacctg	tggaatgacg	caacggataa	actttcaatt	240
accgcttact	ggtcgcccgt	ttacttcaaa	gctaaagaca	gtggcgatca	ccaaatgcgt	300
cacctggatg	accgtaagag	cacaaatgatg	gctgggtctgt	cttatgctca	ctttaccag	360
tacggttacc	tgctgaccac	cctgggtggc	gataccctgg	ataacagcaa	cggcatcgctc	420
tgggatattg	cctggttgta	tcgttacacc	aacgggtggc	tgaccgtgac	tccgggtatt	480
gggtgctcag	ggaacagcga	aaaccagaac	gaatactatt	atggcgatc	gcgcaaagag	540
tcgctcgca	gggtctgcg	tggtataaac	tcgaacgaca	gctggagccc	ttacctggag	600
ctgagcgcca	gctacaactt	cctcggcgac	tggagtgttt	acggtaccgc	gcgctacacc	660
cgtctgtctg	atgaagttac	tgacagccc	attgtggata	aatcctggac	tggcctgatt	720
tctaccggga	tcacctacaa	attctga				747

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 747

SequenceName : SEQ ID 454

25 SequenceDescription :

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

atgaaaaaaa	cattactggc	agccgggtg	gtactggcgc	tctcttcgctc	ttttactgtc	60
aacgcagctg	aaaacgacaa	accgcagtat	ctttccgact	gggtggcacca	gagcgttaac	120
gttgctcgga	gctatcacac	ccgtttcgga	cgcagatcc	gcaacgatac	ctacctgag	180
tacgaagcat	tcgctaaaaa	agactggttc	gacttctatg	gttatgcgga	tcgcgcggta	240
ttcttcggcg	gtaactccga	tgcaaaaggt	atctggaacc	acggttctcc	tctgtttatg	300
gaaatcgaac	cacgtttctc	catcgacaag	ctgaccaata	ctgaccttag	cttcgggtccg	360
ttcaaagagt	ggtacttcgc	gaacaactac	atttacgaca	tgggtcgtaa	taaagatggt	420
cgccagagca	cctgggtacat	gggtctgggt	accgatatcg	acactggcct	gccgatgagc	480
ctgtccatga	acgtctatgc	gaaataccag	tggcagaact	atggcgcagc	gaacgaaaac	540
gagtgaggacg	gttaccgttt	caaaattaaa	tactttgtgc	cgattaccga	tctgtggggc	600
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gggtggtcagt	ggaacgacga	tgcagaactg	aacttcggca	acggcaactt	caacgttcgc	840
tctaccggct	gggtggtta	cctggtagta	ggttacaact	tctga		885

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 885

SequenceName : SEQ ID 455

50 SequenceDescription :

## Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

atgctttcaa	cacaatttaa	cagggataat	caatatcaag	ccatcaccaa	accgtcacta	60
cttgccgggt	gcatagcact	ggcactatta	ccttctgccg	cttttgctgc	accagccact	120
gaagaaacgg	tgattgttga	gggttcagcc	acagctccag	atgatggcga	aaatgattac	180
agcgtaacgt	ctacctctgc	gggtaccaa	atgcagatga	ctcaacgtga	tattcoctcag	240
tcggtcacta	ttgttagcca	gcagcggatg	gaagatcagc	agttacaaac	gctgggcgaa	300
gtgatggaaa	acacgctggg	gatcagcaaa	agtcaggcgg	attccgatcg	tgctctttat	360
tattcccgcg	gattccagat	cgataactat	atggttgatg	gtatccccac	ctattttgaa	420
tcgcgctgga	atctgggcga	cgcactttct	gatatggcac	tgtttgaaacg	cgtagaagta	480
gtgcgtggcg	cgacaggact	catgaccggg	acgggtaatc	catctgcggc	aattaatatg	540
gttcgaaaac	acgcgaccag	tcgtgaattt	aaaggcgatg	tctcggcgga	atcgggtagc	600
tggaacaaag	aacggtatgt	ggcggattta	caaagcccac	tcaccgaaga	cggtaaaatc	660
cgcgcgcgaa	ttgtcggcgg	ctaccagaat	aacgactcat	ggctggaccg	ctacaatagt	720
gaaaagacct	tcttctccgg	cattgtcgat	gctgatttag	gcgatcttac	gacgctttca	780

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gcccgttacg aatatcagcg cattgatgtt aatagcccaa cctggggcgg tttaccgcgc 840
tggaatactg atggcagcag caacagttac gatcgcgcac gcagtagcgc acctgactgg 900
gcgtacaacg ataaagagat caacaaggtc tttatgaccc tgaagcagcg gtttgctgat 960
acctggcaag cgacactgaa tgccacccac tctgaagtgc aatttgacag caaaatgatg 1020
5 tatgtcgatg cctatgtaaa caaagcggat ggtatgctgg ttgggccata cagtaattat 1080
ggacctggct ttgattatgt cgccggcacc ggttggaaac gtggcaaacg taaagtgtat 1140
gcgctggatt tgttcgctga cggtagttat gaattgtttg gtcgtcagca caatctaattg 1200
tttggtggca gttacagcaa acaaaacaat cgttacttca gttcatgggc caacatcttc 1260
ccggatgaaa ttggcagttt ctacaacttt aatggcaatt tcccacaaac cgactgggtca 1320
10 ccacagagcg tggcgaggga cgataccaca catatgaaat cgttatatgc tgccactcgt 1380
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15 ctgaaatcgg actggatgaa tagccgtctg accaccacgt tagccatctt ccgtattgag 1680
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accgacaact ggcagctgac atttggcgca acgcgtata ttgcagagga taacgaaggga 1860
aacgcggtta atcctaattc gccacgcacc acggttaaaa tgttcaccag ctatcggttg 1920
20 cctgtcatgc cagagttgac agtcggcggt ggtgttaact ggcaaaatcg cgtgtatacc 1980
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ctcttcaccc gctacaggt gacgaaaaac ttctcgttac aggggaacgt caataacctg 2100
ttcgacaaaa cctacgatac caacgtggaa ggttctatcg tctacggcgc accgcgtaat 2160
ttcagcatta ccggcacgta tcaattctga 2190
25 <212> Type : DNA
    <211> Length : 2190
        SequenceName : SEQ ID 456
        SequenceDescription :

30 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
atggcgcgat tccagtttaa aaaccgtaaa aataatggac ttattttttt tataagtttt 60
35 atggtgatgg gagaagctgc aattgctgca ccgctgccac aatggggcgaa tgccccagcg 120
gtaacgccag ttgcccaatt atctttacag gaaagtatat tacgcgcctt tgccgcaaat 180
cccgtgtcga ctcaacaggc ggccagata ggtattggcg aagcgcaaat tgatgaagcc 240
aaaagtgcct ggtatccgca cgttggtata accggcaacg cggggcgctc ccgacaaacg 300
gactccagcg gcaggcttga taacaacggt tcgtatggca taacctgac acaactggtg 360
40 tatgactttg gtaaaactaa caacgatata aatctgcaaa ctgccgcccg tgacagctac 420
cgctttaaat tgatggcaac cttaaccgat gttgcagaga aaacggcgac tgcctacatg 480
gaagtcaatc gttatcaggc tttgtcgat cgggtcaac gcaatattca ctcgctggaa 540
aacgtctaca acatggcggc attgcgcgct aacgcaggcc tgaactcatc gtcggatgaa 600
ttacaggccc agacgcgtat tgccgggaat cgctcaacgc tggagcaata tcaggcgtag 660
45 atggcgagcg ccaaagcgca actggcggtg ctactggcg tacagccgga ggcatagcc 720
gcgccacctg ctgaattagc cgagcagccg gtatcgctga agaattattg ttaccagtcc 780
atcccgcgtg tgctggcgcc agaaaactta cgccagtcag cacagtacgg cgtggaaaaa 840
acgaaagcgc aatactggcc aacgctcagt attcaggggg gtaaaacgcg ctaccagacc 900
agcgaccgct cgtattggga tgatcagcta caactgaacg ttaacgcgcc gctgtatcag 960
50 ggcggcgcgg tttctgcccc ggtgcaacag gccgaaggcg aacaaaaaat ctctgcctcg 1020
caggctgaac aggcaaaact ggatgtgctg caacgagcgt ctgtggcata tgcgaactgg 1080
accggcgcac ggggtcgtga agaagccggt ttacgcgaat ccgaaagtgc gcacaaaacg 1140
cgagatgtgt accaaaatga atataaattg ggtaaacgca gtctgaatga tctattaacc 1200
gtcgaaacaag atgtctttca ggcgcaatcg gctgaaataa atgccaatga tgatggctgg 1260
55 gtcgcccggc taaattatgc cgctgcggtg aataacctta ttccattagc gggaattaaa 1320
cagggttat acaacgactt acccgacttg aaataa 1356
<212> Type : DNA
<211> Length : 1356
    SequenceName : SEQ ID 457
    SequenceDescription :

60 Sequence
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<213> OrganismName : Escherichia coli O157:H7
65 <400> PreSequenceString :
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tttgccagcac caatgattca tgcaaccgac actgcaacga ccaaagatgg cgaacaacatc 120

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actgttacag cggatgcaaa taccgcaact gaggcgaccg atggttatca acctctgagc 180
actttcacgg cgacattaac cgatatgccg atgctggata tcccgaggt ggtcaataac 240
gttagcgatc aggttcttga aaatcagaat gcaacgacgc tggatgaagc gctttataac 300
gtcagtaacg tggtagagac caatacatta ggcggaactc aggacgcctt tgtacgtcgt 360
5 ggttttgggtg ctaaccggga tggctccatc atgaccaacg gcctgcgaac tgtacttct 420
cgagttttca acgcccggac agaactgtgtg gaagtgcctaa aagggtccggc ctccacgctg 480
tatggcattc tcgatccctg tggattgatt aacgtcgtga ccaagcgccc ggaaaaaaca 540
ttccatgggt ctgtctcagc cactgcctcc agttttggcg gaggcactgg gcaacttgat 600
atcacaggtc ccattgaagg cactcagctg gcataccgcc tgacggggga agtgacggat 660
10 gaagattact ggcgaaactt cggtaaagag gcagtagcat ttattgcccc gtcactcacc 720
tggtttgggtg ataatgcac agtaaccatg ctctattccc atcgggacta taaaactccg 780
ttcgatcgtg gaacgatttt cgaccttacg acgaaacagc ccgtaaacgt tgatcgaaaa 840
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gcagaatatc atctcaatag ccagtggaca gcgcgctttg attacagcta cagccaggat 960
15 aaatacagcg acaatcaggc tcgcgttacc gcgtatgatg caacgacagg aacgctgaca 1020
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tattatgatc ttctgcgcac agatatgatt cgctgtaaaa acgctaaaga tttcaatatc 1200
tacaaccccc tttatggcaa taccagcaaa tgcacaacgg tttcggcgtc ggacagtgat 1260
20 cagacgatca aacaggagag ctactcagct tatgcacagg atgcgctcta tctgaccgat 1320
aactgggattg ccgtcgccgg gatccgctat cagtattaca acgagtcgc gggtaaaggc 1380
cgtcctttta atgtcaatac tgacagccgc gatgaacaat ggacgcccac actgggggta 1440
gtctacaaac tgacgccatc ggtatcctta tttgctaatt attcgcaaac atttatgccg 1500
caatcgtcaa ttgccagcta catcggagat cttccaccgg aatcatctaa tgcttacgaa 1560
25 gtccgggaa aattcgagct gttcgatggg ataacccgag atattgcgct gtttgatata 1620
cataaacgta acgtgttgta taccgaaagt attggtgatg aaaccatcgc caaaacggca 1680
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gggaaccat tgccgaatgt tcctcgctat accggttcgc tattcctgac ctatgacatt 1860
30 cataacatgc caggcaataa cactactgac tttggcggtg gtggacattg cgtaagccgt 1920
cgttcggcaa ccaatggggc tgactattat ctgccaggct atttcgttgc cgatgccttc 1980
gccgcataca aaatgaaatt gcagtatccg gtcacactgc aattaaacgt caaaaacctg 2040
tttgataaaa cgtattacac ctctccatc gccacaataa atctggggaa tcagattggc 2100
gatccgcgtg aagtgcatt caccgtgaaa atggaatttt ga 2142
35 <212> Type : DNA
<211> Length : 2142
      SequenceName : SEQ ID 458
      SequenceDescription :

40 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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45 caagaggcaa cggtgaaaga ggtgcatgac gcgccagcgg tgcgtggcag tattatcgcc 120
aatatgctgc aggagcatga caatccgttc acgctctatc cttatgacac caactacctc 180
atctacaccc aaaccagcga tctgaacaaa gaagcgattg ccagttacga ctgggcggaa 240
aatgcgcgta aggatgaagt aaagtttcag ttgagcctgg catttcctgt gtggcgtggg 300
attttaggcc cgaactcgtt gttgggtgcg tcttatacgc aaaaatcctg gtggcaactg 360
50 tccaatagcg aagagtcttc accgtttcgt gaaaccaact acgaaccgca attgttcttc 420
ggttttgccg ccgattaccg ttttgacggg tggacgctgc gcgatgtgga gatgggggat 480
aaccacgact ctaacggggc ttcagaccgg acctcccgca gctggaaccg cctttatact 540
cgcctgatgg cagaaaacgg taactggctg tagaagtgga agcctgggta tgtgggtggg 600
aatactgacg ataaccggga tatcaccaaa tatatgggtt actaccagct taaaatcggc 660
55 tatcacctcg gtgatgcggt gctcagtgcg aaaggacagt acaactggaa caccggctac 720
ggcggcgccg agttaggctt aagttacccg atcaccaaac atgtgcgcct ttatactcag 780
gtttacagcg gctatggcga atcgctcatc gactataact tcaaccagac ccgtgtcggg 840
gtggggggtt tgctaaacga tttgttttga
<212> Type : DNA
60 <211> Length : 870
      SequenceName : SEQ ID 459
      SequenceDescription :

65 Sequence
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<213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :

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agcgggttggtg tcactgtgccc ggacgccatt aaaggcagca gtcccacgcc gcaacaagat    120
ttagttcggg tgatgagtgc gccgcagctg tacgttgggtc aggaggcacg ctttgggtggc    180
aaagtgggttg cggtaacaaaa ccagcaagggtg aaaaccggcc tggaaattgctg taccgtaccg    240
5 ctggacagcg gagccagacc gacgctggga gaaccttctc gcggtcgcat ttatgccgat    300
gtgaacgggtt ttctggacccc ggtggatttc cgtggacaac tggttacggt agtcgggcca    360
atcactgggtg cgggttgacgg aaaaatcggc aacacgccct ataaatttat ggtgatgcag    420
gcaacaggtt acaaacggtg gcatttaacc cagcagggtga ttatgccgcc tcagccgatt    480
gatccctggt tttatggcgg tcgtgggtgg ccctatggcc acggcggtat gggctgggat    540
10 aatcccggcc ccgcgagagt acaaacagtt gtaactgaat aa                    582

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<212> Type : DNA

<211> Length : 582

SequenceName : SEQ ID 460

SequenceDescription :

15

Sequence

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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20 atgcgtaagc agtggctcgg gatctgcacg gcggcaggaa tgctcgcggc atgtacaagc    60
gatgatgggtc agcaacagac agtaagtgtg ccgcagcctg cggatatgtaa cggcccccata    120
gttgaaatta gccggggcggg cccgcgtttc gaaccactga acgcgacggc aaatcaggat    180
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atcactaac tggctaaccg gcgaatgatc gtgggtgcga ttaatgatcg cggtccttac    420
ggcaacgacc gcgttatctt gctttctcgc gcagcagctg accgtcttaa cacgtcaaac    480
aacaccaaag ttctgtatcga tccgattatt gtcgccagg atggttcgct ttctggtcct    540
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30 agcgggtggcg cgggaacaag ttcagtgctc ggcccgcagg gtgacattct tccggtcagt    660
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ggcgaccacaa cgaccttagc gccagggtgta ctggaaggca gcgaaccgac gcctgctcca    780
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35 caggctcgtg cgcaacagta ccaacagcaa ctgggacaga agttcggcgt ccccggtcgc    960
gtaactcaaa atggcgcggt ctggcggatc cagcttggcc cattcgccaa caaagccgaa    1020
gccagtacct tgcagcaacg tttgcaaacc gaagcccaat tacagtcatt tattaccacc    1080
gcgcagtag                    1089

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<212> Type : DNA

40 <211> Length : 1089

SequenceName : SEQ ID 461

SequenceDescription :

Sequence

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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50 agctatggaa ccatcgttaa cgtacgtccg gtacagattc agggcgggtg tgattccaac    180
gttatcggtg caattggcgg tgcgtttctt ggtgggttcc tgggaaat ac tgttggtggc    240
ggaaccgggc gttctctggc tactgcagca ggcgctgttg caggtggcgt agctggtcag    300
ggcgtagaca gtgcaatgaa caaaacgcaa ggtgtcgagc tggaaattcg taaagacgat    360
ggtaatacca tcatggtggt acagaaacaa ggcaacactc gtttctctcc gggccaacgt    420
55 gtcgtactgg ccagcaatgg cagtcagggt accgtttctc cgcgctaa                    468

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<212> Type : DNA

<211> Length : 468

SequenceName : SEQ ID 462

SequenceDescription :

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Sequence

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<213> OrganismName : Escherichia coli O157:H7

<400> PreSequenceString :

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65 gtgtcaaagg caaccgaaca aaacgacaag ctcaagcggg cgataattat ttcagcagtg    60
ctgcatgtca tcttattgct ggcgctgacg tggagttcgt tcgatgagaa tatagaagct    120
tcagctggag gcggcggtgg ttcgtccatc gacgctgtca tgggtgatct aggtgcggta    180

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gttgagcagt acaaacgcat gcaaagccag gaatcaagcg cgaagcggtc tgatgagcag 240
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5 gaagaagccg caaaacagcg cgagttaaag cagaagcaag cggagagagg ggcagcgaaa 420
gcgcgccgag atgctaaagc gaaggccgaa gcggtatgata aagctgcgga agaagcagcg 480
aagaaagcgg ctgcagacgc gaagaaaaaa gcagaagcag aagccgccaa agccgcagcc 540
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10 aaagccgccc cagacaaaaa agcggcagct gcaaaaagcag cagctgaaaa agccgctgca 780
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ccgaaaacgg ggggaggggc gaaaggggaa aatgcttcgc ctgccgggag tggtaatact 900
aaaaacaatg gcgcacatag ggccgatata aataactatg ccgggcagat taaatctgct 960
aaactaaagta agttctatga cgcacgttcc tatgcaggca aaacctgtac gctgcgcata 1020
15 aaactggcac ccgatggtat gttactggat atcaaacctg aaggtggcga tccgcgactt 1080
tgtcaggctg cggtggcagc agctaaactt gcgaagatcc cgaaccacc aagccaggca 1140
gtatatgaag tgttcaaaaa cgcgccattg gacttcaaac cgtaa 1185
<212> Type : DNA
<211> Length : 1185
20 SequenceName : SEQ ID 463
SequenceDescription :

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25 <213> OrganismName : Escherichia coli O157:H7
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ggatgccagt caaatgctga cgatcatgcc gccgatgttt atcaaaccca tcaactgaat 120
30 accaacaag aaactaaaac cgtaaataatt atttccattc tcccgcaaa agttgcccga 180
gacaaactccc aaaataaaac gaacgcacaa gccttcggcg cgcttattgg cgcagtcgct 240
ggcgggtgta tcggccacaa cgtcgggtct ggcagcaatt ccggaacgac ggcagggtgca 300
gttggcggcg gagctgtagg cgcggcagcg ggttctatgg tgaatgataa aaccttagtg 360
gaaggtgttt cttaaagcgt taaggaaggg accaaagtgt atacctctac tcagggtgggt 420
aaagagtgcc agtttacgac aggttttagcc gtgttatta ccacgacgta taacgaaacg 480
35 cgtattcagc caaataccaa atgtcctgaa aagagctaa 519
<212> Type : DNA
<211> Length : 519
SequenceName : SEQ ID 464
SequenceDescription :

Sequence
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40 <213> OrganismName : Escherichia coli O157:H7
<400> PreSequenceString :
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50 tattttgtcc gtaagttaaa aatgcaaaaa gataacgtga tgatcacggc cgatgcgctg 360
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cacagcctgc ccgccagtca tcaggcgata ttttcccggt tatccgggtt gaaaaaatgg 480
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3714

SequenceName : SEQ ID 479

SequenceDescription :

Sequence

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   acaacaacaa ccaatatcaa tattgcaggc acaggaggga atgtcgccgg gactttgggc      300
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10  aacaatagcc ctgttttcca aggtaacctg gctctttata acgaaatggg tgactctatc      480
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20  cttaaagcta acccatggct tgggaatttc gctgctggta acagctctca agtgaatgcg      1080
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25  ggggacactt acatcagcac gctaagaaac agccctcagc ttgcgagcag acctacagcg      1380
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   aacacttact ataaagctgg tggcgctgaa gtgaaatact tccgccctta tagcgtgtat      1560
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   accatcaacc aagaactcgg gcgtaacccc tttaggaaag tggggattgt tagttctcaa      1560
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5      gcggctcagc atgggattga gttagggtctt aaaatcccca ccatcaacac gaactactac 2040
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      SequenceDescription :

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      <211> Length : 1563
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      SequenceDescription :

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<212> Type : DNA
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SequenceDescription :

25 Sequence
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<212> Type : DNA
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SequenceName : SEQ ID 484  
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ggcatcgggc tgcaagcggg ctataagcaa ttctttggca aaaaaaggaa ttgggggtta 1620  
35 aggtattatg gtttctttga ttataacat gcttatatca aatctaattt ttttaactcg 1680  
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40 atgaacctcg ctaggcccaa gaaaaagac agcgatcatg ccgctcagca tggcatggaa 1980  
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<212> Type : DNA  
45 <211> Length : 2091  
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SequenceDescription :

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50 <213> OrganismName : Helicobacter pylori, strain J99  
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55 gactattctg ggcagggtcaa tttgggttat agcgggatta ccgcgcctaa gagttggcaa 180  
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	gtggcgggga	ctttcagctt	cacttactac	ggcgagttga	tgactaggga	ctttcaggtg	1080
	agctctagct	acaatagcgc	taacatgggt	acttggttta	gcgaagcggc	atgcagggcg	1140
5	gcagggcttc	cggcagggta	taacttggct	gtgccttatt	atgccactaa	ctacaatggg	1200
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30	<211> Length : 2526						
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	Sequence						
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	<213> OrganismName : Helicobacter pylori, strain J99						
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	aacaacctca	atcaggcggt	aacgaacgcg	agcagccctt	cagaaatcaa	tgctgcgcat	240
	gataatttaa	aagcaaacac	gcaagggcta	atttgcgaaa	aaaccaatcc	ccggcgctat	300
	caagcgggtg	atgtggcgct	caatgcggcg	gtagggtgtg	ggaatgtcat	cgctataat	360
	gtccaatgcg	gtcctggtaa	cagtggacaa	caaagcgtaa	cctttgaggg	ccaaccagga	420
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	aaacaagata	gcggtatttc	tgttttggat	agtgcaggaa	aacaagtaac	tataacaata	600
	acaacgcaaa	ctaattggag	taataaaaag	gaaactacta	ctactactac	tactactaat	660
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50	ccatgggtca	atcacaaatc	aggacaaaac	gggggcgcgc	cgtgggggtt	agatacggca	780
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	caagtgggct	acaaacaatt	ttttggtgaa	aagagaaggt	gggggttaag	gtattacggc	1560
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	aattcccagt	atgtgaattt	agcgaccttc	aataatttct	atagcgctaa	aatgaatgtg	1800

gccaattttcc aattcttgggt caatttaggc ttgagaatga acctcgctaa gaataagaaa 1860  
 aaagcgagcg atcatgcggc tcagcatggc gtggaattag gcgtgaagat cccacgac 1920  
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5 <212> Type : DNA  
 <211> Length : 2007  
 SequenceName : SEQ ID 487  
 SequenceDescription :

10 Sequence  
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<213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

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 aaaagacaca ccaccacaaa aaacacttac gcaacttaca attattttacc cacagacacg 180  
 attttaaaaa gagcgggctaa tttattcacc aatgccgaag cgatttcaaa attaaaattc 240  
 tcatctttat cccctgttag agtgttggat atgtataatg gtcaattaac tatagaaaac 300  
 ttcttgcctt ataattttaa taatgttaag cttagtttta cagacgctca aggcaacacg 360  
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 aacacttgtc cttacaataa taatggtaat acaaaaaatg attgttggca aaatttcacc 660  
 25 ccacaaaccg cagaagaatt caccaatttc atgttgaaca tgatcgctgt cttagactcc 720  
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 agccacacta aaggctatgg gcataacggg aatatgacct atcaaaagat gccggtaacg 1140  
 aaagatgggtc aagtggaaaa ggatagtaat ggcaagccaa aagattctga tggcctccc 1200  
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 35 aattccatct atcacaattg tgcggatgtc ccggctggct ttttaggggt aacagcagcg 1320  
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 tcgcaaagtt ttagaagccc tatttttaggg gttaacgcta aaataggcta tcaaaactac 1560  
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 gttaaatcaa aagtcacgca attgagctat ggtgggggga tagatttgtt attggatttc 1680  
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 45 tctaaatatt ctgtagggat tagcatccct ttaatccaaa gaaaagctag cgtcgtttct 1920  
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<212> Type : DNA  
 <211> Length : 2007

50 SequenceName : SEQ ID 488  
 SequenceDescription :

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55 <213> OrganismName : Helicobacter pylori, strain J99  
 <400> PreSequenceString :

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 tatttagggg tgggtatca gcttagcgcg atcaacacgt ctttttagcac cagttctata 180  
 60 gataaatcgt atttcatgac cggcaatggg tttggcgtgg tggtgggggg gaaatttgtg 240  
 gctaaaacgc aagctgtaga gcatgtgggt tttcgttacg ggttgtttta tgatcagacc 300  
 ttttcttctc acaaatccta tatttctacc tatgggttag aatttagcgg tttgtgggac 360  
 gctttcaatt cgccaaagat gtttttgggg ttggagttag gcttaggcat cgctggggcg 420  
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 65 tcgcttttcc aattgcttgt gaaagtgggt tttcgttttg gctttttcca caatgaaatc 540  
 acccttgggt tgaattccc tgctattcct aacaaaaaaa cggaaatcgt tgatggcttg 600  
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<212> Type : DNA  
<211> Length : 663  
SequenceName : SEQ ID 489  
SequenceDescription :

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Sequence  
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<213> OrganismName : Helicobacter pylori, strain J99  
<400> PreSequenceString :

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ttagccaacg ataatggcac tagctcaaaa acaagcgcgc aagcgatcaa tcaagcgggt 240  
15 aataatttga atgaaagcgc aaaaacttta gccgggtggga caaccaattc ccctgcctat 300  
caagccacgc ttttagcatt gagatcggcg ttagggttat ggaatagcat gggctatgcg 360  
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20 gagcaatatg aaaaaatcca tgaagcctat caaatccttt caaaggcttt aaaacaagct 600  
gggcttgcctc ctttaaatag caaaggggaa aagttagaag cgcattgaac cacatcaaag 660  
gatcaacaag gaacatccag tgaccaaact acaaccacaa cttctgttat tgatacgact 720  
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25 tcatggcaaaa cagccggtgg cggaacaaat tcatgtgcga cttttggtgc ggagttagt 900  
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30 atagggaaat gcgatgtgag tgggtgtgagt agttcaaata tgacaccgca aaatatgaat 1200  
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35 caaaaaagaa ggtgggggtt aaggtattac ggcttttttg actacaacca tacctacatc 1500  
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40 ttattcaatt taggcttgag aaccaatctc gctaggccta agaaaaaaga cagcgatcat 1800  
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tttgcgatt ga 1932  
<212> Type : DNA  
<211> Length : 1932  
SequenceName : SEQ ID 490  
SequenceDescription :

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Sequence  
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<213> OrganismName : Helicobacter pylori, strain J99  
<400> PreSequenceString :

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gtttatatga gcgtgggcta tcaaatcggc gaagccgcac aaatggtgaa aaacaccggc 120  
gaaatccaaa aagtctccaa cgcttacgaa aatttgaaca accttttaac ccgctataat 180  
gaactcaaac aaacggcctc taacactgat tcaagcaccg ctcaagcgat tgacaatcta 240  
gaaaagagcg ctacgagatt gaaaacgacc cctaataaccg ccaatcaagc cgtgtcctca 300  
gcgctcagct ctgcgggtggg catgtggcaa gtgatagcct ctaatttagc caacaactcg 360  
ctatcttcta gcgaatacga aaaactcaaa gcgacttctc aattgctcca aaatacccta 420  
60 gaaaaataaaa acaataatct taaaattgaa atgactatg accagctttt aactcaagct 480  
agtaccatta ttaataccct tcaaacgcaa tggccaggcg tagatggggg caatggcaaa 540  
ccatggggca ttaatacaag cgggaacgca tgcgctatct ttggtagcac ctttaacgcc 600  
attaatagca tgattgatag cgctaaaaaa gccgcgcgag atgcccgaag aactgcccga 660  
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atgaatggcg tgggcgtgca actaggctat aagcaattct ttgggaaaaa taaatttttt 1020
gggatccggt attatggctt ttttgattac aactatgcgt atatcaaata caattttttc 1080
aactccgctt ccaatgtttt cacctatggc gcgggcagtg atcttttatt gaacttcctc 1140
5 aatggcggat cggatcgaaa ccgcaaagtc tcttttggca tttttggggg catcgctcta 1200
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10 ttggcttatt ga      1452
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<211> Length : 1452
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      SequenceDescription :

15 Sequence
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<213> OrganismName : Helicobacter pylori, strain J99
<400> PreSequenceString :
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   aaaatcaata aagaaagggt catctaccct atgcagcaat tcgcaacgat tgcgggctat 180
   ttagggcttg gtttttagcct gttacccaaa aagggtttcag accatgttct aaaaggcaaa 240
   atagggggca tggtcggatc tattttctat gacggcacga agaagtttga agacggctct 300
25 gtggcttaca acctctttgg ttattacgat gggtttatgg gggctctata taatatctta 360
   caaacggata gccttgagac acagaacatg aaacacaaca aaaatgtccg caattatgtc 420
   tttagcgacg cgtatttaga atacgcttat aagaattatt ttgaaataaa agccgggcgc 480
   tatctctcca ctatgcctta taaaagcggg caaacgcaag gctttcaagt ttctgggcaa 540
   tacaagcatg cgcgcttgac ttggttttagc tcaatgggga ggcggtttgc ttatggttcg 600
30 tttttaatgg attggtttgc cgcaacggac acttatagcg gaggttttac caaaaacaat 660
   aatggagggt atgatagcca tgggcgaaag gtgctttatg gcacgcgatg ggtgcaactc 720
   acctataaac ctcatcggtt cctcatagaa ggccttttatt acctttcgcc tcaaactctt 780
   aacgctccag gcgttaagat tgggtgggac tctaacccta attttagcgg cacaggcttt 840
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45 <211> Length : 1416
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5 SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99  
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<213> OrganismName : Helicobacter pylori, strain J99  
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<212> Type : DNA
25 <211> Length : 2235
SequenceName : SEQ ID 496
SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99
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## 5 Sequence

<213> OrganismName : Helicobacter pylori, strain J99

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<212> Type : DNA

<211> Length : 660

SequenceName : SEQ ID 498

SequenceDescription :

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## Sequence

<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

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45	acttatttct	tcgcgactcg	tttttactat	aacaagtggc	aatttggggg	tagcgtctat	960
	aaaaatatcg	gtaacgctaa	tggcgatata	ggtattttatg	gcgaccctct	agggataaac	1020
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	aacgggtttt	tatatgtagg	ctcgcagtat	aggggggttta	gttggaataa	tttagggcgt	1140
	tggacggata	gccccagggc	tgatgaaagg	agtctcgcg	tctttttgag	ttatttttct	1200
50	aataagtata	atattagaat	ggatttgaaa	ctagaatatt	atggcaatat	caccaaaaaa	1260
	ggctatttga	ttgggtattg	tggcatgtat	gttccagttg	atcctaattg	gcctggcacg	1320
	caacctttta	cacacaacgt	gtattctgac	aggagccata	tcattgttta	cattacttat	1380
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<212> Type : DNA

<211> Length : 1398

SequenceName : SEQ ID 499

SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

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	aaaaacaccg	gcgaattgaa	aaacttgaa	gacaaatacg	agcagttaag	ccaatcttta	180
	gccccactgg	cttcgttaaa	aaaaagcatt	caaacggcga	acaacattca	ggctgtcaac	240
	aatgctttta	gcgatttaaa	aagctttg	agtaacaacc	acacaaacaa	agaaacatcg	300

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ggaagaatcc atagagatgg gaactgcaca ggattacaac aatgttttat gagcaaaagaa 480
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5 gccttatcag aatgctctag caatcaatca aatggaggca aaacttccat gactacagct 600
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gttgaactgg gcattaaaaa ccctaccatt aacaccaatt attattcttt tctaggcact 1860
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<212> Type : DNA

30 <211> Length : 1917

SequenceName : SEQ ID 500

SequenceDescription :

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<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

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40 ttctccaaag tgggttttaa ccgttcgcct attaaccttg ttaaaggtat ctatccctaca 180
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45 gaccctaggg gtattggcta tatgtatag ggtgagtggg acggcttgtt ccctaattac 480
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65 <212> Type : DNA

<211> Length : 1587

SequenceName : SEQ ID 501

## SequenceDescription :

## Sequence

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5 <213> OrganismName : Helicobacter pylori, strain J99
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    ggcacggctt taggctcggc gtatgtcgc tgggctaggg gtgctgacgc ttctttttac 180
10 aaccgcgcta acatgggctt tactaacgat tggggcgaaa acagaagcga atttgaaatg 240
    accaccaccg tgatcaatat cccggccttt agctttaaag tccctacgac caatcaaggc 300
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    ttatccacaag ctatcaatcg tgttcaaggg ottatgaact taaccaatca aaaagtcgta- 480
15 accctcgctt caaaacctga cactcaaatc gtgaatggct ggacaggcac gactaatattt 540
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    caagcccaaa gcccacaaga cgcgataggc attccggact ctaatggcta taccgtggct 1620
    tttgggacta aatacaattt taggggcttt gatctggcg tagcggggag tttcactttt 1680
35 aagagcaacc gctccagttt gtatcaatcc ccaactattg ggcaattgag aatcttttag 1740
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  <212> Type : DNA
  <211> Length : 1764
    SequenceName : SEQ ID 502
    SequenceDescription :

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45 <213> OrganismName : Helicobacter pylori, strain J99
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    gcggctgatg acgcacagg catgacgggtg gcggattctt tgcgttcgca agcagagcagt 180
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    gccgtgatcg ctacggta ccaaacctt ggatctgggg ttacaacctt aagagggcgc 1260
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ttcaacaaaa acaacatttt ggcgcaatca ggcagctatg cgatgagtca agccaatacc 1500
gttcaacaaa atatcttaag gcttttaact tag 1533
5 <212> Type : DNA
  <211> Length : 1533
    SequenceName : SEQ ID 503
    SequenceDescription :

10 Sequence
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  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
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20 caaattagtg ctgtcaatag tcagattgca agcattttag cgagtaacac taccctaaa 420
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  <212> Type : DNA
  <211> Length : 1113
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    SequenceDescription :

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40 <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
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<212> Type : DNA

35 <211> Length : 3504

SequenceName : SEQ ID 505

SequenceDescription :

Sequence

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<213> OrganismName : Helicobacter pylori, strain J99

<400> PreSequenceString :

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45 aaattgaatt accatccagc tagcgagaaa gttcaagcgt tagatgaaaa gattttactt 180
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<212> Type : DNA

<211> Length : 783

SequenceName : SEQ ID 506

60 SequenceDescription :

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<213> OrganismName : Mycoplasma pneumoniae

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<212> Type : DNA  
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 SequenceDescription :

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<213> OrganismName : Mycoplasma pneumoniae
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<212> Type : DNA

<211> Length : 4884

20 SequenceName : SEQ ID 508  
SequenceDescription :

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25 <213> OrganismName : Mycoplasma pneumoniae
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SequenceName : SEQ ID 511

25 SequenceDescription :

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60 <213> OrganismName : Mycobacterium tuberculosis H37Rv

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SequenceName : SEQ ID 523

SequenceDescription :

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	SequenceDescription :						
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	<400> PreSequenceString :						
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<212> Type : DNA

<211> Length : 1848

SequenceName : SEQ ID 536

SequenceDescription :

Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

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	gtgatataca	accttttttg	tcaaaacgct	cccgcgatcg	cggccgcgca	agccgcatac	420
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	aacacaagtc	ctgttgggct	gctagccggc	tcgggctacc	agaactacgg	tggtcttatc	2820
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	tttgccgtga	ccagcttggg	ctccgggttg	gccaaacatc	gcaacaacct	gtcgggcctg	2940
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<212> Type : DNA

<211> Length : 2964

SequenceName : SEQ ID 537

SequenceDescription :

Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :

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  gcgtatcagg cggtagcgcc ccaaatgtcg gcgtttcacg cccagttcat gcaggcggtt 240
  acgggtgccc gcggggctta tgcggctgcg gaggcggtca acgtctcggc ggccgagagc 300
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35 ggcggggcgg gcggcaatgg cggcgccgcc agcggcgccg gcgggtgggt gttggggacc 1980
  ggtggtgccg gtggtgccgg tggtaacggc ggcaatggcg gaaaagccgg ttttagccct 2040
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<212> Type : DNA

<211> Length : 2304

SequenceName : SEQ ID 538

45 SequenceDescription :

Sequence

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50 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
<400> PreSequenceString :

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65 ggcgggcaaa acaccgagac cggcccgggc gccagcaacg gcggcgcggg cggcgccggt 900
  ggcggcgggc ggtacctggt cggcgatggg ggccggcgcg ggaccggcg ggcggcgcc 960
  aagaattcca gcggtggcgc caccctcacc gggggcaccg gagggacggg cggggcgggc 1020
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   agcgacggcg gcgcgcgg ccacggcggg gccggcgggg gcgcccggct gatcggagcc 1500
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<212> Type : DNA

<211> Length : 2196

SequenceName : SEQ ID 539

SequenceDescription :

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Sequence

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<213> OrganismName : Mycobacterium tuberculosis H37Rv

<400> PreSequenceString :

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   acgaacttcg gtaacggaac caacggcaac ttcaactttg gtagcggcaa taccggcagt 180
   aacaacatcg gtttcggaac caccggcagc gggaatttcg gtttcggaac caccggcaac 240
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<212> Type : DNA

<211> Length : 2226

SequenceName : SEQ ID 545

30 SequenceDescription :

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<212> Type : DNA

65 <211> Length : 1632

SequenceName : SEQ ID 546

SequenceDescription :

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<211> Length : 1821
SequenceName : SEQ ID 547
40 SequenceDescription :

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<212> Type : DNA  
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50 <212> Type : DNA  
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SequenceName : SEQ ID 549  
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 35 <211> Length : 2406  
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 65 ggtagcgcg ggaacggcg gcctggctcg gctcagcagc gtggcgctcg gggcgcggg 1020  
 aaccggcgcg gcagcggtg caacggcggc gtgtggtacg gcaacgggtg cggcgcggg 1080  
 gccggcgggc aagggggggc cggcatgaac accacctcgc ccggcgggcc gggcggtgtc 1140  
 ggcggggcag ggcggcaccg catcttgttc ggcgacgggt gcgcgggtg ggttggcgcc 1200  
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 65 <211> Length : 1305  
 SequenceName : SEQ ID 551

## SequenceDescription :

## Sequence

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5 <213> OrganismName : Mycobacterium tuberculosis H37Rv  
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 10 ccggcgctcg cggcgatggc cgcgcggcg ggcgcgtatg cgggcttttt gaccacagcc 240  
 tcggctcaag ccagctggc tgcggggcag gctaaggcgg tggccagcgt gttcagggcc 300  
 gccaaggccg cgatcgtgcc tccggccgcg gtggcgggca accgtgaggc gttcttggcg 360  
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 tacgaggaat actgggcccgc tgatgtggcg gcgatgaccg gctatcacgc cggggcctcg 480  
 15 caggccgcgc cgcagttgcc gttgccggcc ggcttgcaac agttcctcaa caccctgccc 540  
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 aacatcggct tcggcaacca gggcccccata gacgttaacc tcttggcgac gccggggccag 780  
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 25 ttcaacaccg gagccaatac cctggtgcct ggcgacctca acaacctggg cgtcgggaat 1140  
 tccggcaacg ccaacatcgg ctccgggaac gcggcggttc tcaacaccgg ctccgggaac 1200  
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 agcgggggca ctgtcatcaa cggccagacc tcgggcattg gcaacatcgg cgtcccgggc 1560  
 accctctttg gctccgtccg gaggcgcttg aacacgggcc tgtttaacat gggcaccgcc 1620  
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35 <212> Type : DNA  
 <211> Length : 1659  
 SequenceName : SEQ ID 552  
 SequenceDescription :

40 Sequence  
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<213> OrganismName : Mycobacterium tuberculosis H37Rv  
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<212> Type : DNA  
 <211> Length : 1086  
 SequenceName : SEQ ID 553  
 SequenceDescription :

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## Sequence

<213> OrganismName : Rickettsia prowazekii strain Madrid E  
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	ggagggcggtg	aaattaaaaat	atcggcagat	aaagcaaatg	ctatcatagg	aggaatcaat	240
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	ataggctaca	ctaactctct	tttaggaata	aatgtaggaa	acggagaagc	caagattttat	600
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 7023

SequenceName : SEQ ID 554

SequenceDescription :

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Sequence

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&lt;213&gt; OrganismName : Rickettsia prowazekii strain Madrid E

&lt;400&gt; PreSequenceString :

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	tgcattacga	acccggaacc	tgcacccgga	aagatgtgga	tgcgaggaga	tggaggcaac	4620
	cagcctgcac	gttatgacga	tttcacattc	gaagcaggca	agaagtacac	cttcacgatg	4680
	cgtcgcgcg	gaatgggaga	tggaaactgat	atggaagtcg	aagacgattc	acctgcaagc	4740
	tatacctata	cagtcctatc	tgacggcagc	aagatcaagg	aaggctcgac	cgaacgacc	4800
60	taccgcgatg	caggaatgag	tgcacaatct	catgagtatt	gcgtggaagt	taagtacaca	4860
	gccgcgctat	ctccgaagggt	ttgtgtggat	tatattcctg	acggagtggc	agacgtaacg	4920
	gctcagaagc	cttacacgct	gacagttgta	ggaaagacga	tcacggtaac	ttgccaaggc	4980
	gaagctatga	tctacgacat	gaacggctcg	cgtctggcag	ccggtcgcaa	cacgggtgtt	5040
	tacacggctc	aggcgggcta	ctatgcagtt	atggttgctg	ttgacggcaa	gtcttacgta	5100
65	gagaactcgc	ctatcaagta	a				5121

<212> Type : DNA  
 <211> Length : 5121

SequenceName : SEQ ID 559  
SequenceDescription :

## Sequence

5

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&lt;213&gt; OrganismName : Porphyromonas gingivalis W83

&lt;400&gt; PreSequenceString :

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atgaaaagaa aaccgctatt ctcagccctt gtaatccttt cgggcttctt cggatcgggt 60
caccgggcct cagcacagaa agttcctgca ccgcgcgatg gcgagcgcat tatcatggag 120
10 ctaagtgaag ccgatgtgga gtgtacaatc aaaatagaag ccgaggatgg ctatgccaac 180
gacatttggg cagacctcaa cggaaacggc aagtagcatt cgggggagag gctcgattca 240
ggtgagtttc gtgatgttga gttcagacaa acaaaggcca tcgtctatgg caaatggcc 300
aaattcttgt ttagaggttc ttctgcaggg gactatggtg ctacctttat agatattagc 360
aattgtaccg gctgactgc tttcgactgc tttgccaatc tgctgacaga actcgatetg 420
15 tccaaagcaa acggtctgac ttttgtaaac tgcggcaaaa accagctgac caagcttgac 480
ctgcccgcaa atgccgacat tgagacgctg aactgctcca aaaacaagat aacgagtctc 540
aacctatcga cctataccaa gctgaaagag ctttatgtgg gcgacaacgg gctgacagcc 600
ttggatctct ccgccaatc gctcctcgaa gagctggtgt attctaaca cgaggtgact 660
acgataaac tgtctgcaa tacgaacttg aaaagcctgt attgcataaa caataagatg 720
20 accggactcg atgtcgcagc caacaagag ctgaaaatac tccactgcaa caacaatcag 780
ctgacgcgcc tcaatctctc ggccaatacc aagctgacga ctctaagctt cttcaacaac 840
gagctgacaa atactgatct ctccgacaa acggcttttg agtggctttt ctgcaacggc 900
aataagctga cgaagctaga tgtatctgcc aacgccaatc tgatagcact gcaatgcagc 960
aacaaccagc tgactgctct ggatctgtca aaaacgccga aactgacaac gttgaattgc 1020
25 tactccaacc ggatcaaaga taccgccatg cgtgcattga tcgaaagcct gctacgatc 1080
actgaaggag aaggcagggt cgttccttac aacgacgatg aaggaggaga agaggagaac 1140
gtgtgtacaa ccgaacacgt ggaaatggcc aaggccaaga attggaaggt acttacctc 1200
tggggagagc ctttccccgg aataacggct ttgatttcca tcgaagggtga gagcgaatat 1260
tccgtatatc ctcaagatgg catcctctac ctctccggtg tggagcaggg cttgcccggt 1320
30 caggatatata ccgtgggagg aagcatgatg tactcatctg tcgcttccgg atcagccatg 1380
gaaatacagc tcccagagag tgcagcctat gtagtacgta tcggcagcca tgcgatcaaa 1440
accgcatgac cgtaa 1455
```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1455

35 SequenceName : SEQ ID 560  
SequenceDescription :

## Sequence

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40 &lt;213&gt; OrganismName : Shigella flexneri 2a str. 2457T

&lt;400&gt; PreSequenceString :

```
atgaaacgag ctattaccct gtttgctgta ctgctgatgg gctggtcggg aaatgcctgg 60
tcattcgcct gtaaaaccgc caatgggtacc gctatcccta ttggcgggtgg cagcgctaata 120
45 gtttatgtaa accttgcgcc tgcgtgaat gtggggcaaa acctggtcgt agatctttcg 180
acgcaaatct tttgccataa cgattatccg gaaaccatta cagactatgt cactactgcaa 240
cgaggctcgg cttacggcgg cgtgttatct aatttttccg ggaccgtaaa atatagtggc 300
agtagctatc catttccgac caccagcgaa acgcccgggg ttgtttataa ttcgagaacg 360
gataagccgt ggccgggtggc gctttatttg acgctgtga gcagtgcggg cggggtggct 420
attaaagctg gttcattaat tgccgtgctt attttgcgac agaccaacaa ctataacagc 480
50 gatgatcttc agtttgtgtg gaatatctac gccataatg atgtggtggt gccactggc 540
ggttgtgatg tttctgctcg tgatgtcacc gttactctgc cggactaccc tggttcagtg 600
ccaattcctc ttaccgttta ttgtgcgaaa agccaaaacc tgggggtatta cctctccggc 660
acaaccgcag atgcgggcaa ctcgattttc accaataccg cgtcgttttc accagcgcag 720
55 ggcgtcggcg tacagttgac gcgcaacggg acgattattc cagcgaataa cacggtatcg 780
ttaggagcag taggaacttc ggcggtaagt ctgggattaa cggcaaatca cgcacgtacc 840
ggagggcagg tgactgcagg gaatgtgcaa tcgattattg gcgtgacttt tgtttatcaa 900
taa 903
```

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 903

60 SequenceName : SEQ ID 561  
SequenceDescription :

## Sequence

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65 &lt;213&gt; OrganismName : Shigella flexneri 2a str. 2457T

&lt;400&gt; PreSequenceString :

```
atgggcatca aacaacacaa tgggaataacc aaagccgatc gtctcgtcga attaaaaatc 60
```

```

5  cgttcgccct caattcaact gataaaattt ggcgctattg gtttgaatgc aattatcttt 120
   tccccctgc tgatagctgc tgatacagga agtcaatatg gcaccaatat tactattaat 180
   gatggtgaca gaattacagg agataccgcc gatccatcag gaaacctcta tgggtgtaatg 240
   accccagcag gaaacacgcc tggcaatatc aacctgggta atgatgtcac cgtcaatgtc 300
   aacgacgcct ctggatatgc aaaaggaatc attattcagg gcaaaaacag ctccctgaca 360
   gctaaccgac tcacagtaga tgttgttggg caaacctctg ccacggcat taacttaatt 420
   ggtgactata cccatgctga cttaggcaca ggcagcacca ttaagagtaa cgtgacggc 480
   atcattattg ggcatagtct aacactaaca gccactcaat tcaccattga aaactcgaac 540
   ggtataggcc taaccatcaa tgactatggc accagtgtcg atcttggag cggaagtaaa 600
10  atcaagacgc atggaagtac aggtgtttat atcgggtggc tcaacggcaa taacgccaat 660
   ggtgtgcgcg gttttacggc gacagacctg acaatcgatg ttcagggcta cagcgccatg 720
   gggataaacg tacagaaaaa ctctgttgtc gatctcgga caaacagtac cattaaaacc 780
   aatggcgata atgctcacgg cctctggagc tttggccagg ttagcggcaa tgcactcact 840
   gttgatctaa ctggagccgc ggccaatggc gtcgaggttc gtggtggtag aaccactatc 900
15  ggtgcagata gtttatcttc ttccgcgcag ggcggtggcc tgcgtaccag tagttcagac 960
   gcgacaatca atttttctgg cacggcagcg caacgaaaca gcatcttttc cggcgggttct 1020
   tatggtgcct cgcccagac ggcaacggct gttatcaaca tgcaaatac cgatattacg 1080
   gttgatcgta atggcgctct ggcgctgggt ttgtggcgcg tcagcggcgg tagaataacc 1140
   ggagacagtt tggctatcac gggcgccagag ggatttatgc catgaccaac 1200
20  agccagatcg acctcacgag cgatctggtc attgatatga gtacaaccga ccagatggcc 1260
   atcgcaacgc aacatgacga tggttatgcc gccagccgca tcaacgcctc gggtcgtatg 1320
   cttatcaacg cttatcttct ttccaaaggt gggctaatca atctggatat gcaccctggg 1380
   tcggttttga caggttctct cctcagcgat aatgtcaatg gcgggaaact ggacgttgca 1440
   atgaataaca gcgtctggaa cgtaacaagt aattctaata tcgacacgct ggcgctgagc 1500
25  cattcaactg tcgattttgc cagccacggg tcaactgccg gcacaattac cacattaaac 1560
   gtagagaacc tgcgcggtaa cagtaccttt attatcgctg ctgatgttgt tggcgagggt 1620
   aatggcgtaa ataatagagg ggatttattg aatatcagcg ggagtgtgc tggtaatcac 1680
   gtattggcta tccgcaacca gggcagcgag gccacaacgg gaaatgaagt tctgacagtg 1740
   gtaaaaacca ctgacggcgc ggcctcgttc agcgcgtctt ctcaggttga gttgggggga 1800
30  tatctgtacg atgtgcgtaa aaatggcact aactgggagc tttacgcttc cgggacagtt 1860
   ccggaaccga ctctaatacc tgaaccaca ccagctcccg ctcagcctcc catagtcaac 1920
   cccgaccta cgctgaacc cgctcccacg cctaacccca ccacgaccgc agatgctggc 1980
   ggcaattatc tcaatgtcgg ttacttattg aactatgttg aaaacgtag cgtgatgcaa 2040
   cggatgggtg cagtgcgaaa tcagagtaaa gacggtaata tctggttgcg cagttatggg 2100
35  ggaagcctgg actcctttgc cagtggcaaa ctgacgggct ttgacatggg ttacagcggt 2160
   atccagtttg gtggggataa acgtctctct gatgtaatgc cgttgatatg cgttctgtat 2220
   attgactcaa cacatgcac gccggactat agcggaggcg acggtaccgc acgttcagac 2280
   tacatgggaa gttatgcgag ttacatggca caaaaacggt tttacagcga tctcgttata 2340
   aaagcatcgc gccagaaaaa tagtttccac gtactggaca gtcagaacaa cggcggtaac 2400
40  gccaacggca ctgcgaatgg aatgagcatc tccttggag ccgggagag gttcaacctg 2460
   tcccctactg gttatgggtt ctatatagag ccgcaaaccc agcttacata cagccaccag 2520
   aatgagatgg ctatgcaagg gatactgggg gatgaatata atctgaatca ctacgaatcg 2580
   ctgctggggc gtgccagcat gatactgggg tatgacatca ccgcaaggcaa cagccagctg 2640
   aatgtctatg tgaagactgg cgctatccgc gagttttcag gggataccga atatctgttg 2700
45  aacgactccc gggagaagta cagtttcaaa ggtaatggct ggaataacgg cgtgggagtc 2760
   agtgcacagt ataacaaca gcacacattc tatctogaag cggat tacac gcagggtaac 2820
   ctctttgatc agaagcaagt caacggagga tatcgcttca gcttttaa 2868

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2868

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50  SequenceName : SEQ ID 562
   SequenceDescription :

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Sequence

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55  <213> OrganismName : Shigella flexneri 2a str. 24 57T
   <400> PreSequenceString :
   atgagtaagt ttgttaaaac agctatttgc gcggaatagg tgatgggctg gttcacctct 60
   acggcaacaa tcgctgcggg taacaacggg actgcacggt ttacggcac cattgaagac 120
   tcagtgtggt ctatcgttcc ggacgatcac aaactgggag ttgat atggg tgatatcggt 180
60  gccgaaaaac tgaaaaataa cggcaccacc acgccgaaaa gtttcagat tcgtctgcaa 240
   gattgcgtat ttgatactca ggaacaatg accactacct ttactggtag cgtttcttct 300
   gcaaatagcg gcaattatta caccattttc aataccgata ccgggtggcg atttaacaat 360
   gttagcctgg cgtatcggtg ctctctgggt accctctaca aaagcggcat gggatttgac 420
   cagaaaatag tgaaagacac ttctaccaac aaaggcaag cgaagcagac actgaacttt 480
65  aacgcctggc tggtcggcgc agctgatgag ccagatctgg gtaat tttga agcaaatacc 540
   accttcaga ttacttacct gtaa
   <212> Type : DNA

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<211> Length : 564  
SequenceName : SEQ ID 563  
SequenceDescription :

5 Sequence

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<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

atgaaaaatta	aaactctggc	aatcggttgtt	ctgtcggctc	tgtccctcag	ttccgcagcg	60
gctctggccg	atactacgac	ggtaaatggg	gggaccattc	acttttaaagg	ggaagtgtgtt	120
aacgccgctt	gcgcagttga	tgcaggctct	gttgatcaaa	ccgttcagtt	gggacaggtt	180
cgtaccgcta	gcctgaagca	ggctggagca	accagctctg	ccgttggttt	taacattcag	240
ctgaatgatt	gcgataccac	tgttgccaca	aaagccgctg	ttgccttctt	aggtaccggca	300
attgatgcta	cgcgtactga	tgtactggct	ctgcagagtt	ctgctgcagg	tagtgcaaca	360
aacgttggcg	tgcagatcct	agacagaaca	ggcaatgctc	tgacgctgga	cggtgcgaca	420
tttagtgcac	aaacaaccct	gaataacggg	accaacacca	ttccgttcca	ggcgcgttat	480
tatgcaatcg	gcgagggaac	cccggttgca	gctaattgcg	atgcaacctt	caaggttcag	540
tatcaataa						549

<212> Type : DNA

20 <211> Length : 549

SequenceName : SEQ ID 564

SequenceDescription :

Sequence

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<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

atggcaagta	tttcatcgct	gggagtcggg	tcaggtctgg	atttaagttc	aatccttgat	60
agcctcaccg	ccgcgcaaaa	agcgacgcta	accctatatt	caaatacagca	atcgctcgttt	120
accgctaaac	ttagcgccta	cggtagcgtg	aaaagcgcgc	tgacgacttt	ccagaccgcc	180
aatactgcat	tgtctaaagc	cgatcttttt	tccgccacca	gcaccaccag	cagcaccacc	240
gcgttcagtg	ccaccaccgc	gggtaacgcc	atcgccggga	aatacaccat	cagcgtcacc	300
catctggcgc	aggcgcaaac	cctgaccacg	cgaccacca	gagatgatac	gaaaaacggcg	360
atcgccaaca	cgacagcaaa	actcaccatt	caacaaggcg	acgacaaaga	tccgattacc	420
attgatatac	gcgcgggcta	ctcatcgcta	agcgggatcc	gtgatgccat	caacaacgca	480
aaagcggggc	taagtgcgag	catcattaac	gtgggtaacg	gtgaatatcg	tctgtcagtc	540
acatcaaatg	acaccggcct	tgataatgcg	atgacactct	cggtcagcgg	tgatgatgcg	600
ctacaaagtt	ttatgggcta	tgacgccagt	gccagcagca	acgggatgga	ggtctcggtc	660
gccgcccaga	atgcgcagct	gacggtaaac	aacgtcgcca	tgcgaaacag	cagcaaacact	720
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acgctaacca	tacttcagga	cacctccaaa	gtgcaaacgg	cgattaaaga	ctgggtgaat	840
gcctataact	cgctaataga	taccttcagc	agcctgacca	aatacaccgc	cgtagatgcg	900
ggagctgata	gccagagttc	tagcaatggc	gcactgctcg	gcgactccac	gctgcggacg	960
attcagacgc	agttgaagtc	gatgctgagt	aataccgtca	gttcttccag	ctataaaacg	1020
ctggcgcaga	ttggatatcac	gaccgatccc	agcgatggca	aactggaact	ggatgccgcac	1080
aaactcaccg	ctgcactgaa	aaaagatgcc	agcggcgtag	gtgcattgat	tggtggcgat	1140
ggtaaaaaaa	ccggcatcac	aaccaccatc	ggcagcaacc	tgaccagttg	gctttcgaca	1200
acgggcatta	ttaaagccgc	taccgatggc	gttagtaaaa	ccctgaataa	gttaactaaa	1260
gactacaacg	ccgccagcga	tcgcattgat	gcgcaggtcg	cgcgctacaa	agaacaattt	1320
acccaactgg	acgtttttaat	gacctcgcta	aacagcacca	gcagctactt	aacgcagcag	1380
ttcgaaaaca	acagtaattc	caagtaa				1407

<212> Type : DNA

<211> Length : 1407

SequenceName : SEQ ID 565

53 SequenceDescription :

Sequence

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<213> OrganismName : Shigella flexneri 2a str. 2457T

<400> PreSequenceString :

gtggagggta	aagctgataa	tgtcgtactg	gaaaatggcg	gacgcctgga	tgtgctgacc	60
ggacacacag	ccactaatat	ccgcgtggat	gatggcgga	cgctggatgt	ccgcaacggt	120
ggcaccgccca	ccaccgtatc	catgggaaat	ggcgggtgtac	tgctggccga	ttccggtgcc	180
gctgtcagtg	gtacccggag	cgacggaaag	gcattcagta	tcggaggcgg	tcaggcggat	240
gcctgatgac	tggaaaaagg	cagttcatte	acgtgaaacg	ccggtgatac	ggccacggat	300
accacggtaa	atggcggact	gttcaccgcc	aggggaggca	cactggcggg	caccaccacg	360
ctgaataacg	gcgcataact	taccctttcc	gggaagacgg	tgaacaacga	taccctgacc	420

```

atccgtgaag gcgatgcact cctgcaggga ggcgctctca ccggtaacgg cagcgtggaa 480
aatcaggaa gtggcacact cactgtcagc aacaccacac tcaccagaa agccgtcaac 540
ctgaatgaag gcacgctgac gctgaacgac agtaccgtca ccacggatgt cattgtctag 600
cgcggtacag ccctgaagct gaccggcagc actgtgctga acgggtgccat tgacccacag 660
5 aatgtcactc tcgcctctgg tgccacctgg aatattcccg ataacgccac ggtgcagtgc 720
gtggtggatg acctcagcca tgccggacag attcatttca cctccaccgg cacagggaag 780
ttcgtaccgg caacctgaa agtgaaaaac ctgaacggac agaatggcac catcagcctg 840
cgtgtacgcc cggatatggc acagaacaat gctgacagac tggtcattga cgggtggcagg 900
gcaaccggaa aaaccatcct gaacctggtg aacgccggca acagtgcgtc ggggctggcg 960
10 accagcggta agggatttca ggtggtggaa gccattaacg gtgccaccac ggaggaaggg 1020
gcctttatcc aggggaataa gctgcaggcc ggtgccttta actactccct caaccgggac 1080
agtgatgaga gctggtatct gcgcagtga aatgcttacc gtgcagaagt cccctgtat 1140
gcctccatgc tgacacaggc aatggactat gaccggattc tggcaggctc ccgcagccat 1200
cagaccgggt taagcggtag aaataacagc gtccgtctca gcattcaggg cgggtcatctc 1260
15 ggtcacgata acaacggcgg tattgcccgt ggagccacgc cggaaagcag cggcagctat 1320
ggcttcgtcc gtctggaggg tgacctgctc agaacagagg ttgccggtat gtctgtgacc 1380
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aacgcctccg gcctgtgggc tgacattgtg gcccaggga cccgccacag catgaaagcc 1560
20 tcatcggaca ataacgactt ccgcgtccgg ggctggggct ggctgggttc gctggaaacc 1620
ggtctgccct tcagtatcac tgacaatctg atgctggagc cgcaactgca gtacacctgg 1680
caggcgactc ccctggatga cggccaggat aacgcagtt atgtgaagtt cgggcatggc 1740
agtgcacaac atgtgcgtgc cggcttccgt ctgggcagcc accacgatat gaactttggt 1800
aaaggcacct catcccgta caccctgcgc ggcagtgcga aacacagtgt gcgtgaactg 1860
25 ccggtgaact ggtgggtaca gccttctggt atccgcacct tcagctcccg gggggacatg 1920
agcatgggta cagccgcagc cggcagtaac atgacgtctc caccgtcaca gaatggtagc 1980
tactggacc tgcaggccgg actggaagcc cgtgtccggg aaaatatcac cctgggcgtt 2040
caggccagtt atgcccacag catcaacggc agcagcgctg aaggttataa cagtcaggcc 2100
acactgaatg taaccttctg a
30 <212> Type : DNA
    <211> Length : 2121
        SequenceName : SEQ ID 566
        SequenceDescription :

35 Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
40 atggcctttt ctcaagcggg tagcggatta aacgctgccg ccaccaacct cgatgttatt 60
ggcaacaata tcgccaaactc cgccacctac ggcttttaaat caggcacggc ctctttttgcc 120
gatatgtttg ccggttcgaa agtgggactg ggggtaaaaag ttgccggtat cactcaggac 180
tttaccgatg gcacgaccac caacacgggg cgaggtctgg acgttgctat cagccagaac 240
ggtttttttc gtctggtaga cagcaacggg tcggtgttct acagcgtaa cggacaattt 300
aagctggatg aaaaccgtaa cctgttgaat acgcaagggt tacagctgac ggggtaccgg 360
45 gtaaccggta cgccgcccagc tattcagcaa ggggcgaatc cgaccaatat ttcgatcccg 420
aataccctga tggcagcgaa aactaccacc acggcgctga tgcagatcaa cctgaattcc 480
agtgtaccgc ttccctactgt tacgccattc agcgcagca atgccgatag ctataacaaa 540
aaaggttcgg tgactgtttt cgacagtcag ggtaatgctc atgacatgag cgtctatttt 600
gtgaagaccg gggataataa ctggcaggtc tacaccagg atagcagtga tccaaacagc 660
50 attgcgaaga cagcgacaac actggaattt aatgctaata gcacattagt ggatggtgcg 720
atggcgaata atatcgcaac cggcgcaatt aacggtgcag aaccgcgccac gtttagtctg 780
agcttcctca actccatgca gcaaaaatacc ggcgctaaca acattgtggc aaccaccag 840
aatggctaca aaccgggcga tctggtgagt tatcaaatca atgatgacgg tacggtgtc 900
ggcaacaatt ccaacgaaca aacccaactg ctggggcaga ttgtactggc gaactttgcc 960
55 aacaacgaag gtctggcatc cgaaggcgac aacgtctggt ctgcgacgca atcttctggc 1020
gtggcgctgt tggggacagc cgggacggga aactttggca ctctgaccaa cgggtgcgctg 1080
gaagcgtcca acgtcgatct cagtaaagaa ctggtcaata tgatcgttgc ccagcgtaac 1140
tataagtcta acgcccagac catcaaaaacc caggaccaga tctcaaacac gcgggttaac 1200
ttacgctaa
60 <212> Type : DNA
    <211> Length : 1209
        SequenceName : SEQ ID 567
        SequenceDescription :

65 Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T

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<400> PreSequenceString :
atgaaactcg tgcacatggc cagtgggtta gcggttgcca ttgcgttggc ggcttgcgca      60
gataaaagcg cggatattca gacgccagcc ccggctgcaa atacgtctat ttcagcaaca      120
caacaacctg ctatccagca accgaatgtc tccggtactg tctggatccg tcagaaagtc      180
5  gcactgccgc ctgatgctgt gctgaccgtg acactttctg acgcgtcggt agccgatgca      240
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tttgttctgc catttaaccc ggcagatgtt cagccgaacg cgcgtattct gttgagtgcg      360
gcgattaccg tgaatgacaa actggtattt atcaaccgata ccgttcagcc ggtgatcaac      420
cagggcgcaa ctaaagccga cctgacattg gtgccgggtac agcaaacccg cgtgccgggt      480
10 cagggcagcg gtggcgcaac gactaccgta ccttcgactt caccaactca ggtgaatccg      540
tcttcggcag ttcccgtctc tacgcaatat taa
<212> Type : DNA
<211> Length : 573
SequenceName : SEQ ID 568
15 SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
20 <400> PreSequenceString :
atgatcataa aaaaaagcgg tggctcgctgg cagctaagcc tgctggcgag cgtggtaatc      60
agtgcctttt ttctcaacac agcttacgcc tggcaacaag aatataatcg tgatacgcaa      120
cccgacattt ccacagagcg ttacacctgg gatagtgtac atcaacctga ttacaacgat      180
attttgtcgc aacgtattca aagtagccaa agggcgctgg gactggaagt caatctggcg      240
25 gaagaaactc ctgtggatgt gaccagcagt atgagtatgg gctggaattt tcttttatat      300
gaacagggtta caaccggccc ggtcgcggca ttacattacg atggcacaac cacctcgatg      360
tataacgagt ttggcgacag tactaccacg ctgaccgatc cgttatggca tggcagcggt      420
agtagcttag gctggcgctg tgactcccgg cttggcgatc tccgaccctg ggcgcaaata      480
agctataacc agcaatttgg cgagaatatc tgggaaggcg aatcaggcct gagccggatg      540
acggcgacaa accagaacgg caactggctg gatgtcaccg taggcgctga tatgttgctc      600
30 aatcaaaata ttgccgccta tgctgcgcta actcaggcag aaaataccac taataatagc      660
gactatctgt atacgatggg ggtagcgcc agattttaa      699
<212> Type : DNA
<211> Length : 699
35 SequenceName : SEQ ID 569
SequenceDescription :

Sequence
-----
40 <213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
atgaaatggt gcaaacgtgg gtatgtattg gcggcaatgt tggcgctcgc aagtgcgacg      60
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gtttccacca ccaatgccac ggtagatctc ggcatctttt attctttcag tcttatgtct      180
45 gccggggcgg catcggcctg gcatgatgtt gcgcttgagt tgactaattg tccggtggga      240
acgtcgaggg tcaactgccag cttcagcggg gcagccgaca gcaccggata ttataaaaac      300
caggggacgg cgcaaaacat ccagttagag ctacaggatg acagtggcaa cacattgaat      360
actggcgcaa ccaaaacagt tcaggtggat gattcctcac aatcagcgca cttcccgtta      420
caggtcagag cattgacggt aaatggcgga gccactcagg gaaccattca ggcagtgatt      480
50 agcatcacct atacctacag ctga
<212> Type : DNA
<211> Length : 504
SequenceName : SEQ ID 570
55 SequenceDescription :

Sequence
-----
<213> OrganismName : Shigella flexneri 2a str. 2457T
60 <400> PreSequenceString :
atgaaaagag cgcctcttat aacaggactt ttgttgatat ccacatcctg cgcttatgcc      60
tctcaggag ggtgtggagc cgacagcact agcgggtgca caaattacag cagtgtgggt      120
gatgatgtta cgggtgaacca gacagataac gtgacaggac gggagtttac ctctgcaacg      180
ctaagtagca ctaactggca atacgcctgt tctgtctctg cgggtaaggc agttaaactt      240
gtctatatgg tcagccccgt acttaccacc actggacatc agacaggata ttacaaactc      300
65 aatgacagcc tggatattaa aaccacatta caggcaaacg acattccagg actcacaacc      360
gaccagggtg tctctgttaa ccccgatcc acacagataa aaagcagcac cgtatattct      420
gctgcaaccc aaacgggtgt ttgccagggt gacacgtctc gttatggacc cgttaatat      480
```

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5  ggtgcaaata ccacctttac cctgtatgtc accaagccat ttctcggctc gatgaccatt 540
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    acaggtgact tccatgattt agtcaagtta tcgattcagg gaaatctcac cgccccacag 660
    tcgtgcaaaa ttaatcaggg cgatgttatt aaagttaatt ttggattcat caatggtcag 720
10 aagtttacca cccgcaatgc catgccagac ggttttactc cagtagactt tgatatcact 780
    tatgactgtg gtgatacttc aaagattaaa aactcgttgc aaatgcgcac cgacgggtaca 840
    actggggtag tagaccagta caacctggtc gccaggcgaa gaagttcaga caatgtgccc 900
    gatgtcggta ttcgtattga aaatctcggc ggccggagttg caaatattcc ttttcagaac 960
    ggtatccttc ccgttgatcc ttccgggcat ggaccgctca atatgcgcgc ctggccagtt 1020
15 aatctggtcg gtggtgagct ggaaacagga aaatttcagg gcacagccac cattaccgctc 1080
    atgggtcggg aa
    <212> Type : DNA
    <211> Length : 1092
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15  ..SequenceName : SEQ ID 571
    SequenceDescription :
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Sequence
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20  <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
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    cccgggtccg cgcccgtcgc caacgggttct attttccagt ctgctcagcc gattaactat 180
    ggctatcaac cgctgtttga agatcgtcga ccacgcaata ttggcgatac gctgaccatc 240
25  gtggttcagg agaacgtcag cgccagcaaa agctcctctg cgaatgccag ccgtgacggt 300
    aaaactaatt ttggctttga tactgtgccc cgctatttgc aggggctggt ttgtaacgct 360
    cgtgcgcatg tcgaagcctc cggtggtaac acgttcaacg gaaagggcgg ggccaatgcc 420
    agcaatacct ttacgggcac gttgacggtg acggttgacc aggtactggt caacggcaac 480
    ctgcatgtgg tgggtgaaaa acagattgcc attaatcagg gtaccgaatt tattcgcttc 540
30  tcgggcgtgg ttaatccacg cactatcagc ggacgcaata ccgtaccgtc tactcagggtg 600
    cgggatgcgc gtattgaata cgtaggcaat ggctacatta acgaagcgca aaatatgggc 660
    tgggtgcagc gtttcttctc taacctgtcg ccaatgtaa 699
    <212> Type : DNA
    <211> Length : 699
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35  SequenceName : SEQ ID 572
    SequenceDescription :
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Sequence
-----
40  <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
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    gtggttgccct ccgaactggc ccgcgcacag ggtaaacgtg gcggtgtggc gggtgcactg 120
    tctcttgccg cggtcacgtc actcccgggt ctggctgctg acatcgttgt gcaccggggt 180
45  gaaacagtga atggcggaac actggtaaac catgacaacc agtttgatc cggaacagct 240
    gatggcgtga ctgtcagtag cgggcttgag ctggggccgg acagtgcga aaacaccggc 300
    gggcaatgga taaaagcggg tggcacaggc ctgtcaccgc aaatggtcgt 360
    cagattgtgc aggcaggagg aactgccagt gatacggtta ttcgtgatgg cggagggcag 420
    agccttaacg gactggcggg gaacaccacg ctggataaca gaggtgagca gtgggtacac 480
50  gggggaggga aagctgccgg tacaattatt aaccaggatg gttaccagac cataaaacat 540
    ggcggactgg caaccggaac catcgtcaac accggtgcag aaggtggtcc ggagtctgaa 600
    aatgtgtcca gcggtcagat ggtcggaggg acggctgaat ccaccaccat caataaaaaat 660
    ggccggcagg ttatctggtc ttccgggatg gcacgggaca cctcattta cgccggtggt 720
    gaccagacgg tacacggaga ggcacataac acccgactgg agggggggtaa ccagtatgta 780
55  cacaacgggt gcacggcaac agagacgctg ataaaccgtg atggctggca ggtgattaag 840
    gaaggaggaa ctgccgcgca taccaccatc aaccagaaag aaagctgcag gtga 894
```

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    <212> Type : DNA
    <211> Length : 894
60  SequenceName : SEQ ID 573
    SequenceDescription :
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Sequence
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65  <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
    atgatgatga aaactattaa acatcttctg tgctgtgcc a ttgccgccag cgcattaatt 60
```

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tccaccgggg tgcattgctgc gtccctggaaa gatgcgctct ccagcgccgc cagcgaactt 120
ggcaacccaaa acagcacgac acaggaaggc gggtggctgc tcgcgtcatt aactaacttg 180
cttagcagcg gaaaccaagc cttaagcgca gataacatga acaatgccgc aggcattctg 240
caatactgcg cgaagcaaaa gctggcttcg gtaaccgatg ccgaaaacat caagaaccag 300
5 gtgctggaaa agctgggctt gaacagtga gaggcaaaaag aagacaccaa ctatctggac 360
gggtattcagg gtttgcgtga aacaaaagat ggtcagcaac tcaatctgga taacatcgga 420
acgactccgc tggcagaaaa ggtgaaaacc aaagcctgcg atctgggtgt aaagcagggg 480
ctgaacttca tttcctga
<212> Type : DNA
10 <211> Length : 498
    SequenceName : SEQ ID 574
    SequenceDescription :

Sequence
15 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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gtttatgctg ctgatgaagg atccggtgaa attcacttta aagggtgaagt tattgaagca 120
20 ccgtgtgaaa tacatcagga tgatattgat aaagagggtt aactcgggtca ggtgaccacc 180
agccacatta atcagtcaca tcacagcgat gccgttgctg tcgacctgct cttagtcaac 240
tgtgatctgg aaaaactccag caacgggtcc ggtggcaaga tttctaaagt tgcagtccac 300
tttgatagct cagcgaaaac caccggcgca gatccgattc tcaacaacac cagcacgggt 360
gaagccaccg gcgtggcggt acgtttaatg aataaagatc aaagcaatat cgttttaggc 420
25 accgctactc cagatatcga cctggctccg acctccagcg aacaaacgct gaatttcttt 480
gctggatggg aacaaattga tcaggctaca cctgtaacgc caggcgagat tacggcgaat 540
gcaacctacg tgctggatta taaataa
<212> Type : DNA
<211> Length : 567
30 SequenceName : SEQ ID 575
    SequenceDescription :

Sequence
35 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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ctatggctgg caggctgttc tgacacttca aatccaccgg caccggtcag ctccgttaat 120
ggcaatgctg ctgcaaatat taattctggt atgttgatta cgccgcccgc gaaaatgggg 180
40 acgacgtcta cagcgagca accgcaaatt cagccggtac agcagccaca aattcagggt 240
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aacggcagcg cagcagagca aggagttgtg atcaagcctg cacaaaattc caccgttgct 360
agtacctata ccgtgaaaaa aggcgacaca cttttctata tcgcctggat tactggcaac 420
gatttccgtg acctgtctca gcgcaacaat attcaggcac catacgcgct gaacgttggt 480
45 cagaccttgc aggtgggtaa tgcttccggt acgccaatca ctggcggaaa tgccattacc 540
caggccgacg cagcagagca aggagttgtg atcaagcctg cacaaaattc caccgttgct 600
gttgctgcgc aaccgacaat tacgtattct gagtcttcgg gtgaacagag tgctaacaaa 660
atgttgccga acaacaagcc aactgcgacc acggtcacag cgctgtgaac ggtaccaaca 720
gcaagcacia ccgagccgac tgtcagcagt acatcaacca gtacgcctat ctccacctgg 780
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gattacctga gtgcctacgc ccataacgac acaatgctgg tccgggaaca acaagaagtg 1020
aaggcggggc aaaaaatagc aacctgggt agcaccggaa ccagttcaac acgcttgcat 1080
55 tttgaaattc gttacaaggg gaaatccgta aaccgcgtgc gttatttgcc gcagcgataa 1140

<212> Type : DNA
<211> Length : 1140
60 SequenceName : SEQ ID 576
    SequenceDescription :

Sequence
65 -----
<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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cgtattcgcg atctcaccag tggtcagggg gtaaggcaaa actcactgat tggctatggc 120
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    ttggtagtggt ggctggatgg cactgggtgac cagacaaccc agacgccgtt taccacacaa      180
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    ctaaaaaaacg tcgctgcggt aatgggtgaca gcgtcaacttc ctccgtttgg acgtcagggg      300
    caaaccatcg atgtgggtggt ttcttccatg ggtaatgccca aaagcttgcg tggaggtacg      360
5    ttgttgatga caccgcttaa gggcggtgac agtcagggtgt atgcgctggc gcagggcaat      420
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    aacgggtggac ggatcaccaa tgggtgcggtt attgaacgtg aattgccag ccagtttggc      540
    gtcgggaata cccttaattt gcaacttaac gacgaagatt tcagcatggc gcagcaaata      600
    gctgacacca tcaaccgcgt gcgtggatat ggcagcgcca ccgcgttaga tgcgcggact      660
10    attcagggtg gcgtaccaag tggcaacagt tcccagggtcc gtttccttgc cgatatccag      720
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    cagactgttg ttactccaca aacgcagatc gatttacgcc agagcggcgg ttcgctgcaa      960
15    agcgtagctt ccagcgccag cctcaataac gtggtgcgtg cgctcaatgc gctgggcgct      1020
    acgccgatgg atctgatgtc tattttgcaa tcaatgcaaa gtgcgggatg tctgcgggca      1080
    aaactggaaa tcactgta                                     1098
    <212> Type : DNA
    <211> Length : 1098
20    SequenceName : SEQ ID 577
    SequenceDescription :

Sequence
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25    <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
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    tgtaaatctg aagcgggttg tgattcagta agtattaata tgccgactgt accaaccact      180
30    gtctttgaag gtaaagctaa atattctacc tatgatgatg cagtcggtgt aaccagcagc      240
    atgttaaaaa ttagctgccc gaaagaagtt gctgggtgtaa aactctcgtt gatcacaac      300
    gacaaaaata ccggtaacga taaggcgata gccagtagca acgataccgt aggtgataac      360
    agcgatgtcc tagatgtttc tgcacctttt aacattgaga gttataaaac agcggaaagg      420
    caatatgcta ttcggtttta agcaaaatac ctgaaactga cagataactc agtgcaatca      480
35    ggtgatgtgt tatcttctct gggttatgcg gtggcgagg attaa                                     525
    <212> Type : DNA
    <211> Length : 525
    SequenceName : SEQ ID 578
    SequenceDescription :

40    Sequence
    -----
    <213> OrganismName : Shigella flexneri 2a str. 2457T
    <400> PreSequenceString :
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50    gtgaacgggt ttctggacc gggtgatttc cgtggacaac tgggttacggt agtcgggcca      360
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    gatccatggt tttatggcgg tcgtggctgg ccctatggct acggcggatg gggctggtat      540
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55    <212> Type : DNA
    <211> Length : 582
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    SequenceDescription :

60    Sequence
    -----
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    ttggtgcggg atagcacgat tactatccgc ggctatgtca gagataacgg ctgtagtggt      120
    gccgctgaat caaccaattt tactgttgat ctgatggaaa acgcgcgcaa gcaatttaac      180
    aacattggcg cgacgactcc tgtcgttcca tttcgtattt tgctgtcacc ctgtggtaat      240

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gccgtttctg ccgtaaaagt tgggtttacc ggcgttgacg atagccacaa tgccaacctg 300
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5 actgcggggc atatcaatgc tacggctacc ttcactctg aatatcagta a 531

<212> Type : DNA
<211> Length : 531
SequenceName : SEQ ID 580
10 SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
15 <400> PreSequenceString :
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ggtgctggtg gtacgttagg aagtctgggt ggattcagcg tgaccaataa cactcaactg 180
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20 ccgttcgcgc ataaaatcgg caccggggcg accggcgata ttgcaaccgt tcaccatctg 300
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25 gataccaccg ccaattataa gctaggcggg gcacagcaac acgatagcgt acgcctcgat 600
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<212> Type : DNA
<211> Length : 639
SequenceName : SEQ ID 581
30 SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
35 <400> PreSequenceString :
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gcaacggcaa ttgatccgct acgttacttg ccgcgcagg gcagcaagcc aaaatgctga 780

<212> Type : DNA
<211> Length : 780
SequenceName : SEQ ID 582
SequenceDescription :

55 Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
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aaccagtctg cgctgtcgag ttctatcgag cgtctgtctt ctggcttgcg tattaacagc 120
gcgaaggatg acgcgcgggg tcaggcgatt gctaaccgtt ttacttctaa cattaaggc 180
ctgactcagg ctgcacgtaa cgccaacgac ggtatttctg ttgcacagac cactgaaggc 240
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65 gacgaaattg accgcgtatc cggtcagacc cagttcaacg gcgtgaacgt actggcaaaa 420
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## Sequence

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	agttcaataa	cagtgaataac	aactactcct	gaggatccta	cagaccctac	tgatccgcaa	4500

gatccatcat caccgcgagac ttcaactgta attaaactaca aacctcaatc aactgcttat 4560  
caaccagct ctgttcaaga aacattacca aatacgggag taacaaacaa tgcttatatg 4620  
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5 <212> Type : DNA  
<211> Length : 4689  
SequenceName : SEQ ID 594  
SequenceDescription :

10 Sequence  
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<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :

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ggcaaagtat ctgattttacc tgttgcagtt gtttaataaag ataaaacggc aacttatgaa 180  
ggaaagaaga tgactatcgg taaagatatg actgataata tgggtccgtaa taaaagtttg 240  
gactatcatt ttgttgatag cgaaaaagct caaaagggagc ttgaaaaagg tgattactat 300  
gatgatcatta ctttaccaga agatctttct caaaatgcgg ctagtgtttt aacagatgaa 360  
20 cctaaaaagc taacgattcc ttaccaaacy tctaaaggac atagttttgt tgcctccaaa 420  
atgagtgaata ctgctgctaa gacttttaaaa gagtctgtgt cgaaaaacat tacaagttct 480  
tacaccaaat cacttttttaa gaatatgtca accctaaaaa caggctcttg cagtgcggct 540  
aatgcaagtc aaaaaatagc gactgggttca aaacagttag caaatggcag tcaagtgatg 600  
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25 ttatatctcg gcttaacagc ttatacggga ggtgtcggtc agctttctgc aggttttaaat 720  
aatttaaaac atggttttgac agcttataca aatggagttg tgcagttagc aaatggcagc 780  
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30 cagttgggaa cactgtttga aagtattcaa aattacagtg ataattgggac agcaacgact 1020  
gcaaatagtc ctgattcttag tacgtattta tctgccatta caacagcagc tcaagcaatt 1080  
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gctttggcca acactgttag ttcaacaaca actacaggtg ctgatgcaaa cgcagtgta 1260  
35 caagcccaag ctatcctaaa caatgtccaa agtattcaaa gtgccttatc tactttacag 1320  
acaacaactg ctaatacacc aacaagcca tcagccagct tgactcaaat taaaaataca 1380  
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40 caatacacta atgcagttga tattcttaat gcaggagcta atactttggc tgctaaaaat 1620  
aaccagttaa cagatgggtac aagtcaattg gtaaatgggt ccaatcaatt aaatagcaac 1680  
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45 gcagttgaca atgataatgc taagactttg tcaagtcctg tcaactatca gcatacagat 1920  
aaagataatg tcaaaacaaa tgggtgttga atggctcctt atatgatgtc agcagcttta 1980  
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50 aaaactttag gattaattat tcttaccagt atcaacttta tggctttagt gacaactttg 2220  
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ggttccagtg caggaaacct tcccttagcc gttacagata agtttttcca agttgtcaat 2340  
ccttatttac caatgagtta ttccggtttct ggtttacgag aaaccatttc tatggctggg 2400  
acaattggta atcaactact agcgtctgag ttatttttcc ttacttttgc tgcttttagga 2460  
55 ttgttaaatc ctggaaggag gattaggtct gtcaaatag cctaa 2505

<212> Type : DNA  
<211> Length : 2505  
SequenceName : SEQ ID 595  
SequenceDescription :

60 Sequence  
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<213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :

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ttagctcaga tgcaagcttta tgatgcaaa gttttacaaat ctaaatggac agagtcaaca 180

	acatatacta	taaaaacctc	cagccctcgc	ggacaaattt	atgacgctaa	aggggtggct	240
	ttagttgaaa	acgagggttaa	agaggttgtt	gcctttacaa	gaagcaatac	catgactgcc	300
	aaggatatta	aagcaaatgc	aaaaaagtta	gcagatatgg	tgactttaac	tgaatctaag	360
	gtaaccaaac	gtcagaaaaa	agattactat	ctggcagatc	caaaaaatta	tcaaaaaatc	420
5	gttaaaaaat	taccaaataa	taaaaaatat	gataactttg	gaaataacct	aacggaatcg	480
	aagatctatg	caaatgctgt	taaagcagtt	ccaaacagtg	ctattgatta	ttctgaagat	540
	gagaaaaaaa	tcattcatat	tttcagccag	atgaatgcaa	cctctgtttt	taatacagct	600
	tcgttaacaa	caggagattt	aacagctgag	caatttgcag	tattggctac	aagcaaatca	660
	gatttaagg	gaatttctgt	taagactgac	tgggaacgta	aaacagataa	aaattccatt	720
10	acttctatta	tcggtaaagt	ttccagtcac	aaaaccggtc	tgctgtctga	agaagccaat	780
	aactatgtta	aaaaagggtta	ttctctgaat	gaccgcgttg	gaacatctta	tcttgaagag	840
	caatatgaaa	acgattttgca	aggtagtcgt	actgttcaag	caatcaagg	taacaaagaa	900
	ggtaaaatta	tcagtataaa	gaccactgcc	aaagggacta	aaggaaaaaa	tctgaagttg	960
	acccttgatc	tgaattttca	aaaagggtgt	gaacaaattc	ttaaccaata	ttttaattct	1020
15	gaattagcat	ctggaaatac	caagtattct	gaaggcgttt	atgctgttgt	tcttaaccctg	1080
	aacacaggtg	cagttctttc	tatggctggt	ttggaacacg	accttaaaac	gggcgaagta	1140
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	gcgactttga	cagctgggtg	ggaaaacggt	gtctttatcag	gcaatcaagt	actcaatgac	1260
	cagcctattc	aatttgcggg	ttcaagccct	attaactctt	ggtttaccac	tggatcaact	1320
20	cctcttacag	caagtcaatc	cttagagtat	tcttctaata	cttatatggt	tcaattggct	1380
	ttaaaaatta	tggaacaaga	ttatcatagt	ggtatgacct	tatcaacaga	tggctataag	1440
	gaagctatgg	agaaattaa	agctacttat	gctcaatatg	gtttgggtgt	ctcaacagga	1500
	attgaccttc	cgggagagtc	aaagggtctat	acgccagaa	attatgatcc	ttctaagtgt	1560
	ttaacagaat	catttgggca	gtttgataac	tatcagcgta	tgacagctgc	acaatatgct	1620
25	gcagctgtcg	caaatgggtg	taaacgtatt	gtccccatt	tggttgaagg	tatctatgat	1680
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	aacggtggta	gttatgcaac	agggaagact	cttgcaaaag	gggcaagtgt	tcccatctcg	1860
	gcaaaaacag	ggacagccga	agcttacgtg	acaggagatg	atggtaaatc	tggtttatac	1920
30	tccaatttaa	acgttgtttg	ttatgcacca	agcagcaatc	ctcaaatg	tgtagctgtt	1980
	gtcttgccac	atgagacaga	ccttcatgga	accactagtc	atgctattac	gagagatatc	2040
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2079

35      SequenceName : SEQ ID 596  
          SequenceDescription :

Sequence

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40	<213> OrganismName : Streptococcus mutans UA159	
	<400> PreSequenceString :	
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	cttaaaagcta	ctaattctag tttggtttat gatagcaata ataactctgat tgctgattta 180
45	gggtgctgaaa	agcgcgaaag tatttcttca gacagtattc caatgaagtt agtaaatgcc 240
	gtttactctta	ttgaagatca cgtttctttt aaacatcgtg gtgtcgacat ttatcgtatt 300
	attgggtgcag	cttggagtaa tttacttcat aaatcaactc aagggggatc cactcttgat 360
	cagcagctta	tcaagctggc ctatttctct actaaagagt ctgatcagac cttaaaacgt 420
	aaagctcaag	aagtttggct gtctctacaa atggagaaaa aatacacgaa agaagagatt 480
50	ctaacttttt	atgtcaataa gggtttacatg ggtaaatggga attacggaat gcgcactgct 540
	gcaaagtctt	attatggcaa ggatcttaaa gacttatcaa ttgcccagct agcgacactc 600
	gcaggtattc	cgcaagcacc gacacaatat gatccttacg ctacagccaa ggcagctaca 660
	agcagacgta	ataccgtttt gtcacagatg tataaacata aaaaaattac aaaacgagaa 720
	tatgatgctg	cagttagcaac accaatttct gatggcctgc aagaactgaa acgtctctct 780
55	agttatccaa	aatatatgga taattatctg aaacagggtt tttcagaggt gaaaaaacgt 840
	actggtcaag	atatcttttc agcaggcatg aaggtttata caaatgttaa tgccgatgca 900
	cagcaatatc	tctggaacat ttataatata gatgaatata ttgcttatcc tgatgataat 960
	ttccaagttg	cttctactgt tatggatgtt aaatatggta aagttattgc acagcttggc 1020
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65	agtaatacaa	gtagttcaga acaaaagtat ggtgccagca gtgaaaaaat ggccgcgcgt 1440
	tatgtgctct	tttctaattg tggaaccac aatacgtcaa taaaatagaa 1500
	tttaaggatg	gaacatcaga gacctatgat gctaaaggca atcgtgcgat gaaagaaacg 1560

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acagcctaca tgatgacaga tatgttaaaa acagtattaa catatggtag tgggtactgag 1620
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5 aaaaatcgct taatgcctgt ttacggagac agtatgaaaa ttgctgcgca agtctatcgt 1860
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tatcgacgcy gtgggttatct ttacctaaat ggttcaagtg ggtcaaatag taggtatggt 1980
gcagctcctg caacttcacg gtcactctct tcatcatctt cttctgattc aaacaataac 2040
gatcaaaata ataatacaac tacagaagcg tctagtgtact catcttcacg aagttctgat 2100
10 gctacgacat cttctaatac ataa 2124

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<212> Type : DNA

<211> Length : 2124

SequenceName : SEQ ID 597

SequenceDescription :

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Sequence

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<213> OrganismName : Streptococcus mutans UA159

<400> PreSequenceString :

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cctactgctg atacacaagc atcagaaccg gctgcaacag aaaaagaaca gtctcctgtt 180
gtagtgtgtg tcgaaagtca cacacaagga aatacaacaa cgacaacatc tcaagttact 240
tctaaagaat tggaaagatg taaggctaat gctaactcagg aagggtttaga agtcactgaa 300
25 actgaagctc aaaaacagcc ttcggttagaa gctgcagatg cagataacaa agcacaggca 360
caaaacaatta atacagcggg agctgattat caaaaggcaa aagctgaatt tcctcaaaaa 420
caagaacaat ataataaaga ttttgaaaag tatcagtctg atgtcaagga gtatgaagct 480
caaaaggcag cttacgagca atataaaaaa gaagtgcac aagggtttggc atctgggcgt 540
gttgaaaaag cccaaggact tgtgttttatt aatgaacctg aggcaaaact ttctattgag 600
30 ggtgttaatc agtacctaac aaaagaagca cgtcaaaaac atgcaactga agatattctt 660
cagcaatata atactgataa ttatacagct tctgatttta cccaagcaaa tccatattgat 720
ccaaaaggag atacttgggt caaaatgaaa gtgggagatc agatttcagt tacctacgat 780
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35 aagacaattt tcattgggtg acagacatct aatgctggca gaaatgataa aatcagtgtg 960
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40 ggtgatggag cagattggct ggatgctgtc aatgtgatg gaacgccacg tgctgcgacg 1260
gcttatttat gtgcagggtg tatgacttac aaggggagaa ccttcacctt tactgttggg 1320
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45 ccaccaacaa ctctctgatg accaacgcca gaaaagccaa aaacaccaga ggatcctcaa 1560
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50 aaagaaaact ag 1752

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<212> Type : DNA

<211> Length : 1752

SequenceName : SEQ ID 598

SequenceDescription :

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Sequence

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<213> OrganismName : Streptococcus mutans UA159

<400> PreSequenceString :

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gaacagcctg tcgcagctga gactgtctcg caagctgatg gggacaatcc cgaacaaaca 180
acaagcgttc aacaagaaac tgctcctcaa caaacgaaaa cttctcaaag ctacagcgca 240
accgtagata gtgaagagtc agcaacttcc ccatctgatg aacagaccgt aagtcaaaat 300
gattcaaaact catcatctca aattgatcaa acgatagctg atacgaatcg ctctgactct 360
65 gatcatatatt caaaaacatc agccgctaca actgaagatc aagaagagaa agttaattct 420
gcaaaagcac aaactgctgc cgcaaccaac aatcaagaca ctcgttatag tgcgaaagat 480
gcttatggca attccaattt taacaagaca ttaactgaat ttggaaaaaa tgctaattgtt 540

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gctgatgtaa cctataatgg cgtgagggat gaatatattg tagttaacga tcctagtgtc 600  
 ccttacgttc ctaatgcaaa cgaaattgca aaatacttaa aggaatattt aacagaactc 660  
 cgcaacatca ataattattgc tttcctgttg ccttctgttg atcaggttat gcaaaaatac 720  
 gcacaagatc gggctaacga agaagccaat gaaaaaaacg gcttggatca tgataactaat 780  
 5 ttacctatcc ctaataattt aacttgggtt gccgaagatg gacatttggga tatggatagc 840  
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 10 ggtcttgctt caggtcaaga taatgaaaag ggaatgtggt acgcacaatt ggaatttgggt 1080  
 ggtaacgata cagtaacgataa taccacgat ttttctctt taaaaaacgg caagggaaga 1140  
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 ttccagtcct ctaaagatct tgaccctaata ttcaaggccg ataatagatt ccaagaagga 1320  
 aagggaagcct cgtttcatca ggctatttct ccaactattt aatctcatcg cgatgaagtt 1380  
 15 ggtaataaag accaaaattc tctttctgct caactacctg atacaggagt tcaaaaaaat 1440  
 aatcaattag ccttgatagc ttttaggaaca ggcttgattt tactttccgg acttcttctt 1500  
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 <211> Length : 1524  
 20 SequenceName : SEQ ID 599  
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 25 <213> OrganismName : Streptococcus mutans UA159  
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 30 acttcaaatc aggttgaagc aaaaacggat agtgcaaacca aggatcctca agaaaaaaca 240  
 ggaagtgttg caactgatgc cccttcaatg aattcagcta ataatatgag tcagtctgac 300  
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 actgattttac cgcaaaaacag ctttaaacaa caactctgctc atgttaaaat gactactgaa 420  
 gcagagaaga ccccatcaca ttcgattaat acctttgtta atgatggtaa tggtaattgg 480  
 35 tattaccttg gtgctgatgg tagaaatgtt acaggcagtc atacgattgg tggcaagact 540  
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 aataaacattt attatgatag agatagtggg gagatgtgga ccaatcgctt tgtcaatgat 660  
 caaggcaattt ggtattatct taataatgat ggtgtccctg tcaccggtag tattactgtc 720  
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 aaaaattgagg ttgttaagac cagtccttga ttgtatagtt atgaatttgg tccttctgtt 960  
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 45 ggacatgttg tttactttga tagtagccat tatgtgacac ttgaattaga tattccttat 1140  
 gatccaaaatg atagcagccg aaatgcatca ccttttattt ttgactcagc agcctttcgt 1200  
 aataactggg tcaacagtta tactgtcaaa gtatagataatt tgcagggtgca agcagatggg 1260  
 tctaatagca gtcaaatatt cagttcagag caagatgcta tcaataatcg tttcttgcct 1320  
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 60 tataacggtc actggctctg gatattttc ttgaatgatc aagtaactgg cactcaaaat 2040  
 actgataacg ccaagaattg gtctggactt tctggcatgg ttgcaacaa tccaacctat 2100  
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 <212> Type : DNA  
 65 <211> Length : 2181  
 SequenceName : SEQ ID 600  
 SequenceDescription :



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5 <213> OrganismName : Streptococcus mutans UA159  
<400> PreSequenceString :

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acaactattt	tagctagtga	tggttttcat	caatatgtga	tttttgatgc	tctttttcgt	180
aatattctcc	atggaacgga	tagtttggtt	tactctttta	aggctgggct	tggttttaat	240
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aatgtaaaaa	atatggcaga	tgctttttat	ctcttcactt	taatcaaatt	tggctctaata	360
ggttttatctg	ctttttacag	tcttggggcaa	atttatacta	aaatctctaa	atcactcgtt	420
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20 ttaacagAAC	aaattagtct	attttcatca	gacatttggg	atttcgattt	ttttgctaaa	840
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ttctccttag	ttattgtcat	aatggcagct	gaaacgttaa	ctcggataaa	ggatataaaa	1140
25 ttgaaaaaatt	ttttaccagc	ctttaccctt	ttgggagtag	gacttttagc	aactttttta	1200
ttcaaggact	attataatta	tttgacacaa	gttaatttta	tattaacaac	tatcttttta	1260
gttagttatt	ttattattct	ttttactttt	tttaatcaat	tagttttctta	taaagttatt	1320
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30 gaaattgaca	actatgttaa	gaaaactaaa	aaagataact	tagaattttt	tcgaacagaa	1500
aaacaaattc	cccaaactta	caatgatggt	atgaaattta	attataatag	catttctcag	1560
ttctcatctg	tcaaaaaata	cttatcagca	caattattga	attctctagg	ctactattca	1620
caaggaaatc	attctaccat	tagttatcct	aataatacta	ttttgatgga	tagtcttttt	1680
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35 aaaaacaata	agctgcaact	ttacaaaaac	ttctattctc	ttccttttagc	acttatgtca	1800
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40 ttgacagtta	ataataaaga	cgaaaatgtc	tttataacaa	ctaacaagca	cacaagttct	2100
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45 ttgattttaca	ctttaccata	tgataaagg	tggtttgcta	aacaaaatgg	aaaagcaatt	2400
aaaatatcta	aagcacaaaa	tggactaatg	aaaattgatg	tttctaaagg	tagtgggaag	2460
attataatga	cttttgtgcc	ccaaggacta	tatcaaggaa	ttcttcttac	ctgtctaggt	2520
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50 <212> Type : DNA  
<211> Length : 2574  
SequenceName : SEQ ID 601  
SequenceDescription :

55 Sequence  
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<213> OrganismName : Streptococcus mutans UA159  
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aatccatttt	cttatgagaa	aaagggaaaa	ttgacgggat	atgatatcga	agttgctaag	180
gaagttttca	aagcttctga	taaatacgat	gtcaaatatc	aaaaaacaga	gtggaccagc	240
attttctctg	gtctagatag	tgacaaatat	caaatcggag	ctaacaatat	cagttatact	300
aaagagcgtg	ccaataaata	tctttattct	aatccaacgg	cttccaatcc	attgggtatta	360
65 gtgggttccaa	aagatagtga	tattaagtct	tataacgata	ttgctgggca	tagcactcaa	420
gtgtttccaag	gaatatcaac	agtgtctatg	ctgcagaaat	tcaataaaaa	ccatgaaaac	480
aatcaagtta	aactaaactt	taccagtga	gatcttgccg	atcaaatccg	gaatgtcagt	540

gatggtaagt atgatttttaa aatttttgaa aaaatttcag cagaaacgat catcaaagag 600  
caaggacttg ataatttgaa agttattgat cttccttcag accaaaaacc atatgtttac 660  
tttatttttg cgcaagacca aaaagactta caaaagtttg tcaataaacg tctcaaaaaa 720  
ctttacgaga atggtacact tgaaaaatta tcgaaaaaat accttgagg aagctatctt 780  
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<212> Type : DNA  
<211> Length : 804  
SequenceName : SEQ ID 602  
SequenceDescription :  
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ttaaaaaaaa atcaattaaa tgggatcatg attgtgacgg ggccagatgg taaggctcaa 180  
gtattttcaa atcaaagcaa ggtagatggc agtcctgttt caattaagga ttattttcct 240  
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20 aaactgtctt taaacacacc ttttaagcaa tattatcctc aaattgaaaa tagtgaaaaa 360  
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cagcaagtgc tgacaactca agagcagcaa ttggattttt cattgaccaa ttatcgcgta 480  
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25 aaggggtggc attttaaaaa gtatattcaa ataaaagata agtccaagtt agctgccttg 660  
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ggagctggtg attatgcttc taggccagtg gattattgga aatttatgat ggcttttatt 780  
aatgaccaat ttgttcctgt cagcgaatac caacgttcta tgaaaatgac ttctaagagc 840  
tattatggcg gcctctatat cagccaaaag atgctgcatg caaatgggtg tggctttgat 900  
30 acttactctt gttttgctta ttcaaactct aaaaccaaag aggtcatggt tttgtttatc 960  
acaaacggta agtataaacg ggtcaaatcc ttagcagcta aagcctttta actatatgca 1020  
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<212> Type : DNA  
<211> Length : 1059  
SequenceName : SEQ ID 603  
SequenceDescription :  
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45 aacggtgcta accttgctgt tgaagagatt aataagcgag gcggcattga tggcaaaaag 240  
attaaagtta tctcaaaaaga taataaatct gataacgggtg aagcatcaac aatctcaact 300  
aatcttgcta cccaaagtaa agtaaatgct atcttgggac cagcaacatc tgggtgctaca 360  
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50 caagatagct tccaaggaaa gatcattgcc aaatatgcaa cagataattt gaaagctaaa 540  
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55 atcttaggac ctgatgggtt taatgatgaa aaatatgttg aaggtgctgg tgcagccaat 840  
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gaaaaattcc tgaaagatta taaggctaag tatgggtgaag agccaaatat gtttgccgct 960  
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gatattgcaa caaacctagc taaattgaaa aactttaaag gtgtgacagg taaaatgaca 1080  
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<212> Type : DNA  
<211> Length : 1173  
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<213> OrganismName : Streptococcus mutans UA159
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  gatattacta agaatatcgc tggtaataag gttgtcttac atagtatcgt tctgtgtggg 180
  cgagatcctc acgaatatga gcctcttctc gaagatgtta aaaagacctc tcaggctgat 240
  gtcatttttt ataatgggat taatcttgaa aatggaggca atgcttgggt taccaaaacta 300
  gttaaaaaatg ctcataaaaa gacagacaag gattattttg cagtgaagca tagtggttaag 360
10 accatttatt tggaaaaatgc aaaagaaaaa ggaaaggaag atcctcatgc ttggcttgac 420
  cttaaaaaatg gtattattta tgctaaaaat atcatgaaac gtctatctga aaaagatcct 480
  aaaaacaaga gttattatca gaaaaatttt caagcctaca gcgccaaact tgaaaaacta 540
  cacaagtag ccaaaagaaa aatcagtcgt atccctactg agaagaaaat gatcgtaact 600
  agtgaagggt ttttcaagta tttctctaag gtttacgata ttccttctgc ctatatatgg 660
15 gaaattaata ccgaagaaga gggaacacca aatcaaatta aggctttagt gaaaaaatta 720
  aggaaaagtc ggggtgtctgc gctttttgta gaaagcagtg ttgatgatcg tccaatgaaa 780
  actgtttcaa aagatacagg tatcccaatt gccgctaaaa tttttacaga ttcagttgct 840
  aaaaaggagc aggcctggaga tagttactat gcgatgatga agtggaaatag agataaaatt 900
  gcaaattggtc tgtcacaatg a 921
20 <212> Type : DNA
  <211> Length : 921
      SequenceName : SEQ ID 605
      SequenceDescription :

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  ctgcttcttt ttttattgcc tatttgtgtca gtattggctt ttatttgttt atttattggc 120
  ggtggtacag ctgagtctca tgatgtggaa gcgacgacag ggggcgttaa gctttcagct 180
  aagcaatttg cagataagac aaagttagga atttcagaag aggaagctaa aaatgcctta 240
  gcttttgccg atagggtgat gtctcgctcat cattttacag ctcaagcaac tgctggagta 300
  ttggctgttg gctttcgtga aagtggcttt gatgtcaaaag cagttaataa ttctgggtgg 360
35 gtagctggct ttttccaatg gtctggctgg ggtagtcttg ttaatggtga tcgttgga 420
  gtagctagta aaagagagtt aactctagag gttgaggtag atttgatgag cactgaacta 480
  gatggctgat atgctgatgt tgtcaaaaaa gttggttctg cgactgatga aaaacaggct 540
  cttaaggatt ggtctcagta ttatgaaggt ttggtcggtta gtgatggtca aacgaaagct 600
  gataaaattg agagtgtggc aacaactatt tgtgaggtt taaagtctgg tggtaacaat 660
40 tatgctaaag tgaataatac gggaacaagt tctactgcta tccgcaggg ttgggaaaa 720
  attagtgttt ttgatggcca tgcttatgaa ggtagtgaat attatcctca aggacaatgc 780
  acttggtatg tttataatcg tgctaaacag ttgggtgtta gcttcagtc ttatatgggg 840
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  acggctttat cttttgtcaa tggtcaggca gggtctgatc caacttatgg tcatgttgct 960
45 tttgtagagg ctgttaaaga tgatgggagt attctaatac gtgagatgaa cgtttatgg 1020
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  <211> Length : 1098
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      SequenceDescription :

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55 <213> OrganismName : Streptococcus mutans UA159
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  atcacaaaat cagatggtac agcactttct aatgatccat ctaaggctgt taattattgg 180
60 gaaccacttt ctttcagtaa ttctattact ttcccagatg aagtcaagt taaggctggg 240
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  gttatgcata ccaatgggca attagctggg aaagcaacaa ctgaccta aaacaggaga 360
  gtaacagtta cttttactga tttttttgaa aaactgccta atgataaggc tatgacatta 420
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65 tataataatg ttgcttatag ctcttatggt aaagacaaag atattacgcc aataagttca 540
  gatgttaaca aagtgggtta tcaggataaa agtaatctg gtttgattca ctgggaaagt 600
  ctcatataca acaacaagg tgctattgat aatttgactt tgactgatgt tgtcggagaa 660
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gttacttata aaactaatga tttaggattg acaacaggat ttacctatac aattccagga 840
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5 ggtaagatg tcagcaacac tattgctatt tcaggaaata atattaatta ttccaatcaa 960
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actagacaaa caggagcttc aacaacacaa acaaaaacga ctgcttctca aacgaatggt 1200
10 ccgacaacaa caaacataac aacaacttca aaacaagtaa ccaagcaaaa agcgaaattt 1260
gttttaccat caacagggtga acaagcaggg cttttgttaa ctactgtagg tcttgtaatt 1320
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<212> Type : DNA
<211> Length : 1362
15 SequenceName : SEQ ID 607
SequenceDescription :

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<400> PreSequenceString :
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gttggtgctg ttagtcggga ctatgctcct tttgagttca aggctcttgt gaacggtaag 180
25 gatactgttg ttgggtgctga tattgatttg gcaaaagcaa ttgctaaaga attgggagtg 240
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gcagacatag ctatctctgg tttatcttat accaagggaac gtgctcaagc ctatgacttt 360
tcagaagctt attataaaaac ggaaaatgct attcttatta aaaagtctga tttgaacaaa 420
tatacaatga tttcttcttt taataataag actaaagtag ctgttcaaaa aggaacgatt 480
30 gaagaaggat tagctaaaaa tcaattaaaa caatcaacaa ttacctcttt gacttcgatg 540
ggcgaagctg ttaatgagct caaatctggt cagggttgatg ctattgatct tgaaaaacca 600
gtggcagaag gttatgtgtc tcaaaaatagt gatttgggtc ttgccaaagt tgccttaaaa 660
acgggtgaag gggatgccaa agcagttgct ctgcctaaag acagtgggtca attagttaag 720
acgggtgaata aggttattaa gaaactcaaa aaagaagata aatacaagca gtttatcagc 780
35 gatgctgtta aattaactgg tcagcaagtg gattga 816
<212> Type : DNA
<211> Length : 816
SequenceName : SEQ ID 608
SequenceDescription :

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<400> PreSequenceString :
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tgttccaatc ttcccgattc tggacagagg aattgggata agataataaa gagaggaatg 120
cttaaaattg ctactgcagg aacgctttat ccgcaatctt atcatgatga tcataataaa 180
ttgacgggtt atgatgttga aattctaaaa gaaataggaa aacgtttggg attgaaagt 240
cagtttactg aaatgggtgt cgatgggtatg ctgacagcca tcaagagcgg tcagatcgat 300
50 gttgctaatt attccctaga agacggcaac aaaaatatca gtaagttttt gagaacctct 360
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55 atagctgttg cagcagtcaa agacaaatac gctatcaaaa taaaccaagg actttatgcc 660
aatccttaca gcactagttt tacattgtct ttgaaaaaca aagtactgca aaagaaaatc 720
aataaggctg tgaagacat gcgcaaggat ggcaccctaa ccaagctatc taagaagt 780
ttccaaggag aagacgtcac taaaaaacat tataatagct ataaaaaaat tgatatctct 840
gacgttgatt aa 852
60 <212> Type : DNA
<211> Length : 852
SequenceName : SEQ ID 609
SequenceDescription :

Sequence
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65 <213> OrganismName : Streptococcus pneumoniae R6
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agaacctact acaaaaaggg ggctctaaaa gaaacctact ggagagtgat agatgggaag      180
5  tactattatt ttgatccttt atccggagag atgggtgtcg gctggcaata taccctgct      240
ccacacaagg ggggttacgat tggctcttct ccaagaatag agattgctct tagaccagat      300
tggttttatt ttgggtcaaga tgggtgtctta caagaatttg ttggcaagca agttttagaa      360
gcaaaaactg ctacgaatac caacaaacat catggggaag aatatgatag ccaagcagag      420
aaacgagtcct attattttga agatcagcgt agttatcata ctttaaaaac tggttggatt      480
10 tatgaagagg gttattggta ttattttacag aaggatggg gctttgatcc tcgcatcaac      540
agattgacgg ttggagagct agcagctggg tgggttaagg attacctctc tacgtatgat      600
gaagagaagc taaaagcagc tccatgggtac tatctagatc cagcaactgg ctggcaaaac      660
cttgggaaca aatgggtact tctccgttca tcaggagcta tggcaactgg ttggtatcag      720
gaagggttccg cttgggtacta tctaaatgca agtaatggag atatgaaaac aggctgggtc      780
15 caagtcaatg gtaactggta ctatgcctat gattcagggt ctttagctgt taataccaca      840
gtagggtggtt actacttaaa ctataatggt gaatgggtta agtaa                      885

<212> Type : DNA
<211> Length : 885
      SequenceName : SEQ ID 610
20      SequenceDescription :

Sequence
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<213> OrganismName : Streptococcus pneumoniae R6
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gctacaaata cggtatattgc gaataccaca ggtggccgat ttgttgataa ggataataga      120
aaatattatg taaaagatga tcataaagca atctattggc ataaaaataga cggtaaaact      180
tactattttg gtgatatggg agagatgggt gtcgggtggc aataacttaga aattcctgga      240
30 acaggttatac gtgataattt attcgataac caaccagtta atgaaattgg ccttcaggag      300
aagtgggtact attttggaca agatgggtgct ttgctagaac aaacagataa acaagtacta      360
gaggcaaaaa cgtctgaaaa tacaggaaaa gtatacggtg aacaatatcc tctatctgct      420
gaaaagagaa cttattattt tgataataat tatgctgtaa agacaggctg gatttatgaa      480
gacggcaatt ggtattattt aaataagcta ggaaattttg gcgatgattc ttacaatcca      540
35 ctaccaattg gtgaagttgc taagggttgg actcaagatt ttcattgtac tattgacatt      600
gatagaagca aaacctgctcc atggtaactac ctagatgctt caggtaagat gcttacagat      660
tggcaaaaag taaacggaaa atgggtattat tttgggtcct ctgggttctat ggcaacagg      720
tggaaatatg tacgaggcaa atgggtattac ttagataata aaaatgggtga tatgaaaaca      780
ggatggcaat accttggtaa caagtgggtac tacctccgtt catcaggagc tatggtaact      840
40 ggctgggtac aagatgggtt aacttgggtc tacctaaatg caggtaatgg agacatgaag      900
acaggttggt ttcagggtcaa tggcfaatgg tactatgctt atagctcagg tgccttggca      960
gtgaatacga ccgtagatgg ctattctgtc aactataatg gcgaatgggt tcaataa      1017

<212> Type : DNA
45 <211> Length : 1017
      SequenceName : SEQ ID 611
      SequenceDescription :

Sequence
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50 <213> OrganismName : Streptococcus pneumoniae R6
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tttgttgctg ctcagcctac tgttgtaaga gcagaagaat ctcccgtagc cagtcagtcct      120
55 aaagctgaga aagactatga tgcagcgaag aaagatgcta agaattgcga aaaaagcagta      180
gaagatgctc aaaaaggcttt agatgatgca aaagctgctc agaaaaaata tgacgaggat      240
cagaagaaaa ctgaggagaa agccgcgcta gaaaaagcag cgtctgaaga gatggataag      300
gcagtggcag cagttcaaca agcgtatcta gcctatcaac aagctacaga caaagccgca      360
aaagacgcag cagataagat gatagatgaa gctaagaaac gcgaagaaga ggcaaaaact      420
60 aaatttaata ctgttcgagc aatggtagtt cctgagccag agcagttggc tgagactaag      480
aaaaaatcag aagaagctaa acaaaaagca ccagaactta ctaaaaaact agaagaagct      540
aaagcaaaat tagaaggagg tgagaaaaaa gctactgaag ccaaacaaaa agtggatgct      600
gaagaagtcg ctctcaagc taaaatcgct gaattggaaa atcaagttca tagactagaa      660
caagagctca aagagattga tgagtctgaa tcagaagatt atgctaaaga aggtttccgt      720
65 gctcctcttc aatctaaatt ggatgccaaa aaagctaaac tatcaaaact tgaagagtta      780
agtataaga ttgatgagtt agacgctgaa attgcaaaac ttgaagatca acttaaagct      840
gctgaagaaa acaataatgt agaagactac tttaaagaag gtttagagaa aactattgct      900

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gctaaaaaag ctgaattaga aaaaactgaa gctgaccta agaaagcagt taatgagcca 960
gaaaaaccag ctccagctcc agaaactcca gcccagaag caccagctga acaacaaaaa 1020
ccagcgccgg ctctccaacc agctcccga ccaaaaccag agaagccagc tgaacaacca 1080
aaaccagaaa aaacagatga tcaacaagct gaagaagact atgctcgtag atcagaagaa 1140
5 gaatataatc gcttgactca acagcaaccg ccaaagctg aaaaaccagc tcctgcacca 1200
aaaacaggct ggaacaaga aaacggatg tggctactt acaatactga tgggtcaatg 1260
gacacaggat ggctccaaaa caacggttca tggctactacc tcaacagcaa tgggtgctatg 1320
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gcaacagggt gggtctaaagt caacggttca tggctactacc tcaacgctaa tgggtgctatg 1440
10 gctacagggt ggctccaata caacggttca tggctattacc tcaacgctaa cggcgctatg 1500
gcaacagggt gggtctaaagt caacggttca tggctactacc tcaacgctaa tgggtgctatg 1560
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gcaacagggt gggtctaaagt caacggttca tggctactacc tcaacgctaa tgggtgctatg 1680
15 gcaacagggt gggtgaaaga tggagatacc tggctactacc ttgaagcacc aggtgctatg 1740
aaagcaagcc aatgggttcaa agtatcagat aaatgggtact atgtcaatgg tttaggtgcc 1800
cttgcagtca acacaactgt agatggctat aaagtcaatg ccaatgggtga atgggtttaa 1860

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<212> Type : DNA

<211> Length : 1860

20 SequenceName : SEQ ID 612

SequenceDescription :

Sequence

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25 <213> OrganismName : Streptococcus pneumoniae R6

<400> PreSequenceString :

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tattccagag gaaatggatc gattgcgcgt ggggatgatt atcctgctta ttataaaaaa 180
30 gggagccagg agattgatca gtggcgcatg tattctcgtc agtgacttcc ttttgtagcc 240
tttcgtttga gtaatgtcaa tgggttttgaa attccggcag cttatggaaa tgcgaatgaa 300
tggggacatc gtgctcgctc ggaagggttat cgtgtagata atacaccgac gattgggtcc 360
attacttggt ctactgcagg aacttatggg catgttgctt ggggtgtcaaa tgaatggga 420
gatcagattg agattgagga atataactat ggttatacag aatcctataa taaacgagtt 480
35 ataaaagcaa acacgatgac aggtatttat cattttaaag atttggatag tggcagtggt 540
gggaatagtc aatcctcagc ttcaacaggc ggaactcatt attttaagac caagtctgct 600
attaaaactg aaccocctag tagtgcaact gtgattgatt actattatcc tggggagaag 660
gttcattatg atcagatact tgaaaaagac ggctataagt ggttgagtta tactgcctat 720
aatggaagct atcgttatgt tcaattggag gctgtgaata aaaatcctct aggtaatctt 780
40 gttctttctt caacaggagg aactcattat ttttaagatc agtctgctat taaaactgaa 840
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cagatacttg aaaaagacgg ctataagtgg ttgagttata cggcttataa cgggaagtcgt 960
cgctatatac agctagaggg agtgacttct tcacaaaatt atcagaatca atcaggaaat 1020
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45 tggtatcatt tcaaatcaaa tgggttctaaa tcaacaggat ggctgaaaga cgggttctagc 1140
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tgggtattatc tgggtagttc aggggcaatg aaaacaggct ggtaccaggt ctctggtgag 1260
tgggtattatt ctactcttc agggcgctta gctattaata cgacgggtgga tggctacaga 1320
50 gtaaacagtg atggagaacg agtatag 1347

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<212> Type : DNA

<211> Length : 1347

SequenceName : SEQ ID 613

SequenceDescription :

55 Sequence

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<213> OrganismName : Streptococcus pneumoniae R6

<400> PreSequenceString :

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gtagctagt tagctgttgc cagtcttgtt atgggaagtg tgggttcattgc gacagagaac 120
gaggaagta ccaagcagc cacttcttct aatatggcaa agacagaaca taggaaagct 180
gctaaacaag tcgtcgatga atatatagaa aaaatgttga gggagattca actagataga 240
agaaaacata ccaaaatgt cgccttaaac ataaagttag gcgcaattaa aacgaagtat 300
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65 gcaaaagttag acgagctttt tgagaagttt aaaaaagata cattgaaacc aggagaaaag 420
gtagcagaag ctaagaagaa ggttgaagaa gctaagaaaa aagccgagga tcaaaaagaa 480
gaagatcgct gtaactaccc aaccaatact taaaaacgc ttgaacttga aattgctgag 540

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	ttcgaatgtga	aagttaaaga	agcggagctt	gaactagtaa	aagagggaagc	taaagaatct	600
	cgaaacgagg	gcacaattaa	gcaagcaaaa	gagaaagttg	agagtaaaaa	agctgaggct	660
	acaagggttag	aaaacatcaa	gacagatcgt	aaaaaagcag	aagaagaagc	taaacgaaaa	720
	gcagatgcta	agttgaagga	agctaattgta	gcgacttcag	atcaaggtaa	accaaagggg	780
5	cgggcaaaac	gaggagttcc	tggagagcta	gcaacacctg	ataaaaaaga	aatgatgcg	840
	aagtcttcag	attctagcgt	aggtgaagaa	actcttccaa	gctcatccct	gaaatcagga	900
	aaaaaggtag	cagaagctga	gaagaagggt	gaagaagctg	agaaaaaagc	caaggatcaa	960
	aaagaagaag	atcgccgtaa	ctacccaacc	aatacttaca	aaacgcttga	ccttgaaatt	1020
	gctgagtcg	atgtgaaagt	taaagaagcg	gagcttgaac	tagtaaaaga	ggaagctaag	1080
10	gaacctcgag	acgaggaaaa	aattaagcaa	gcaaaaagcga	aagttgagag	taaaaaagct	1140
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	cgaaaagcag	cagaagaaga	taaagttaaa	gaaaaaccag	ctgaacaacc	acaaccagcg	1260
	ccggctactc	aaccagaaaa	accagctcca	aaaccagaga	agccagctga	acaacaaaaa	1320
	gcagaaaaaa	cagatgatca	acaaagctga	gaagactatg	ctcgtagatc	agaagaagaa	1380
15	tataatcgct	tgactcaaca	gcaaccgcca	aaaactgaaa	aaccagcaca	accatctact	1440
	ccaaaaacag	gctggaaaca	agaaaaaggt	atgtgggtact	tctacaatac	tgatgggttca	1500
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	atctaaacgc	taatgggtgct	1560
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	atctaaacgc	taatgggttca	1620
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatggcgct	1680
20	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatggcgct	1740
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatgggtgct	1800
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatgggtgct	1860
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatgggtgct	1920
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatgggtgct	1980
25	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatgggtgct	2040
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatgggtgct	2100
	atggcgacag	gatgggtcca	aaacaacggt	tcatgggtact	acctaaccag	caatgggtgct	2106

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2106

30      SequenceName : SEQ ID 614  
          SequenceDescription :

Sequence

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35      &lt;213&gt; OrganismName : Streptococcus pneumoniae R6

&lt;400&gt; PreSequenceString :

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	cctaataaac	caatcctagc	agcatatgtc	cctaataaac	caatcctagc	agataactcct	120
	agttcgggaag	taatacaaga	gactaaagtt	ggaagtatta	ttcaacaaaa	taatatcaaa	180
40	tataagggttc	taactgtaga	aggtaacata	ggaactgttc	aagtgggttaa	tggaagtact	240
	cctgtagagat	tggaagctgg	tcaagatgga	aaaccattca	cgatttcctac	aaaaatcaca	300
	gtagggtgata	aagtattttac	cgttactgaa	gtagctagtc	aagcttttag	ttattatcca	360
	gatgaaacag	gtagaattgt	ctactatcct	agctctatta	ctatcccatc	aagcataaaa	420
	aaaatacaaa	aaaaaggctt	ccatgggaagt	aaagctaaaa	ctattatttt	tgacaaaggc	480
45	agtcagctgg	agaaaattga	agatagagct	tttgattttt	ctgaattaga	agagattgaa	540
	ttgcctgcat	ctctagaata	tattggaaca	agtgcatttt	cttttagtca	aaaattgaaa	600
	aagctaacct	tttcctcaag	ttcaaaatta	gaattaatat	cacatgaggc	tttgctaat	660
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	tttagactca	ctactagctt	aaaacatggt	gatgttgaa	aaggaaatga	atcgtttgcc	780
50	tcagttgatg	gtgttttgtt	ttcaaaagat	aaaactcaat	taatttatta	tccaagtcaa	840
	aaaaatgacg	aaagttataa	aacgcctaag	gagacaaaag	aacttgcatc	atattcggtt	900
	aataaaaaat	cttacttgaa	aaaactcgaa	ttgaatgaag	gtttagaaaa	aatcgggtact	960
	tttgcatctg	cggatgcgat	taaaactgaa	gaaattagct	taccaaatag	tttagaaact	1020
	attgaacggt	tagcctttta	cggtaattta	gaattaaaag	aacttatatt	accagataat	1080
55	gttaaaaaat	ttggtaaaaa	cgttatgaac	ggtttaccaa	aatttttaac	attatctgggt	1140
	aataaatatca	actcattgcc	gtccttcttc	ctaagtggcg	tcttagattc	attaaaggaa	1200
	attcatatta	agaataaaa	tacagagttt	tctgtgaaaa	aagatacatt	tgcaattcct	1260
	gaaactgtta	agttctatgt	aacatcagaa	catataaaag	atgttcttaa	atcaaattta	1320
	tctactagta	atgatatcat	tgttgaaaaa	gtagataata	taaaacaaga	aactgatgta	1380
60	gctaacccta	aaaagaattc	taatcaggga	gtagttgggt	gggttaaaga	caaagggtta	1440
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	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1560
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65	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1740
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1800
	tggtattact	taaacgaatc	aggttcaatg	gctactgggt	gggttaaaga	caaagggtta	1860

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    tgggtattact taaacgaatc aggttcaatg gctactgggtt ggggttaaaga caaaggctta 1920
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    tgggtactata cctataattc aggagattta ttagtaaaca cgactacacc cgatggctat 2040
    cgagtcaatg ctaacgggtga gtgggtagga tag 2073
5  <212> Type : DNA
    <211> Length : 2073
        SequenceName : SEQ ID 615
        SequenceDescription :

10  Sequence
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    <213> OrganismName : Streptococcus pneumoniae R6
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15  aggcaagtac acgcacactc aactgggaat cgcattcaa ccgtacagaa tgaagcggat 120
    tatcactggc ggaaagaccc agaattaggt tttttctcgc acattgttgg gaacggttgc 180
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    gactaccgcc tttatatcga actcttacgc aatctagcag atgaagcagg tttgccgaaa 360
20  acgcttgata cagggaagttt agctggaatt aaaacgcacg agtattgcac gaataaccaa 420
    ccaaacaacc actcagacca cgttgaccct tatccatatc ttgctaaaatg gggcattagc 480
    cgtgagcagt ttaagcatga tattgagaac ggcttgacga ttgaaacagg ctgggcagaag 540
    aatgacactg gctactggta cgtacattca gacggctcct atccaaaaga caagtttgag 600
    aaaatcaatg gcacttggtg ctactttgac agttcaggct atatgcttgc agaccgctgg 660
25  aggaagcaca cagacggcaa ctggtactgg ttcgacaact caggcgaaat ggctacaggc 720
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    tgggtcaagt acaaggacac ttggtactac ttagacgcta aagaaggcgc catggtatca 840
    aatgccttta tccagtcagc ggacggaaca ggctggtact acctcaaacc agacggaaca 900
    ctggcagaca ggccagaatt cacagtagag ccagatggct tgattacagt aaaataa 957
30  <212> Type : DNA
    <211> Length : 957
        SequenceName : SEQ ID 616
        SequenceDescription :

35  Sequence
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    <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
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40  tatgccaaaa aagcgggcgg attcgggttt aaagacaacc acaatccgcg cgattttctg 120
    gcgcgcacgc aagccacagc cgcgcgtgcc cacgcgcgcg agcaaaacgg ttttgaagcc 180
    ttgacacgtt ttgcagccgc cgttttgacg gcacacgcaa ccggcaatgc cggacaagca 240
    accgtcaaca cgcttgccgg cctgttcacg ctgttccgcc tcgcctttat ctggtgctac 300
45  atcgcagaca aagcagcatt acgctcgctg atgtgggtgg gcggatttgt ctgcaccgtc 360
    gggctggttg tcgtggctgc ttga 384
    <212> Type : DNA
    <211> Length : 384
        SequenceName : SEQ ID 617
        SequenceDescription :

50  Sequence
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    <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
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55  gagctcacac gcaaccacac caaacgcgcc tccgcaaccg tgaagaccgc cgtattggcg 120
    acactgttgt ttgcaacggg tcaggcgaat gctaccgatg aagatgaaga agaagagtta 180
    gaatccgtac aacgctctgt cgtaggagac attcaagcca gtatggaagg cagcggcgaa 240
60  ttggaaacga tatcattatc aatgactaac gacagcaagg aatttgtaga cccatacata 300
    gtagttaccc tcaaagccgg cgacaacctg aaaatcaaac aaaacaccaa tgaaaacacc 360
    aatgccagta gcttcaccta ctgcctgaaa aaagacctca caggcctgat caatgttgaa 420
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    ggcttgaaat tcgcgaaaga aacggctggg acgaacggcg acaccacggg tcatctgaac 540
65  ggtatcgggt cgactttgac cgatacgctt gcgggttctt ctgcttctca cgttgatgag 600
    ggtaacaaaa gtacacatta cactcgctga gcaagtatta aggatgtgtt gaatgcgggt 660
    tggaatatta aggggtgtta aactggctca acaactggtc aatcagaaaa tgtcgatttc 720

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gtccgcactt acgacacagt cgagttcttg agcgcagata cgaaaaaac gactgttaat 780
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<212> Type : DNA
20 <211> Length : 1779
    SequenceName : SEQ ID 618
    SequenceDescription :

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25 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
attcttttgg ctgaaggcca aaaatcagcc gtcaccgagt attacctgaa tcacggcaca 60
tgcccagca acaacagtga tgccggcgtg gcatccaccg ccaccgacat caaaggaaaa 120
30 tatgttaaag aagttaaagt cgaaaaaggc gtcattaccg ccacaatgct ttcaagcggc 180
gtaaacacacg aaatcaaagg caaaaaactc tccctgtggg ccaagcgtca agccggttcg 240
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35 acctaa 426
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    <211> Length : 426
        SequenceName : SEQ ID 619
        SequenceDescription :

Sequence
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40 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
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atccgcttct cgcctgctta cttagccata tgccctgtcg tcggcattct tccccaaagt 120
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50 gtggcggcat tgggtggcga tcaatatatt gtgagcgtgg cacataacgg cggctataac 360
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5  caagccaaag gggaaaaacca aggcctcgatc agcgtgggag acggtacagt cattttggat 1440
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   aggggtacgg tgcaactgaa tgccgataat cagttcaacc ccgacaaact ctatttcggc 1560
   tttcgcggcg gacgttttga tttaaacggg cattcgcttt cgttccaccg tattcaaaat 1620
   accgatgaag gggcgatgat tgtcaatcat aatgccacaa caacatccac cgttaccatt 1680
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10  ccgcacgcct atcaatgctt aggaagcggg ggcgaaaaaa tgggaaggat cccacaagga 1980
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   gctcaggatt tcggcaaaac ccgcagtcgc gaatggggcg taaacgccga aatcaaaggt 4260
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50  gcgggcatca aattaggcta ccgctggtaa

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<212> Type : DNA

<211> Length : 4350

SequenceName : SEQ ID 620

SequenceDescription :

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Sequence

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<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491

<400> PreSequenceString :

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   tccgaagcca tctcttttag cgaagggtcaa aaatcagccg tcaccgagta ttacctgaat 180
   cacggcgaat ggcccagcaa caacacttct gccggcgtgg catcctccac cgacattaaa 240
   ggcaaatatg ttcaaaagcg tgaagtcaaa aacggcgctg ttaccgccac aatggcttca 300
65  agcaacgtaa acaacgaaat caaaggcaaa aaactctccc tgtggggcaa gcgtcaagac 360
   ggttccgtaa aatggttctg cggacagccg gtttaagcga acgacaccgc caccaccaac 420
   gacgacgtca aagccgacac cgccgcgaac ggcaagcaga tcgacaccaa gcacctgccc 480

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tcaacctgcc gcgacgcagc atctgccgga taa 513
<212> Type : DNA
<211> Length : 513
    SequenceName : SEQ ID 621
5    SequenceDescription :

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<213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
10 <400> PreSequenceString :
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    aactgacag gtattccatc gcatggcgga ggtaaacgct ttgcggtcga acaagaactt 120
    gtggccgctt ctgccagagc tgccgttaaa gacatggatt tacaggcatt acacggacga 180
    aaagtgtcat tgtacattgc aactatgggc gaccaagggt caggcagttt gacagggggg 240
15 cgctactcca ttgatgcact gattcgtggc gaatacataa acagccctgc cgtccgtacc 300
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    ttaaccactt ctttatctac acttaatgcc cctgcactct cgcgcaccca atcagacggg 420
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20 ttcctgcgcg gcatagacgt tgtttctcct gccaatgccg atacggatgt gtttattaac 600
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    ctgaaagccc aaacaaaact ggaatatctc gcagtagaca gaaccaataa aaaattgctc 720
    atcaaaccaa aaaccaatgc gtttgaagct gcctataaag aaaattacgc attgtggatg 780
    ggaccgtata aagtaagcaa aggaattaaa ccgacagaag gattaatggg cgatttctcc 840
25 gatatccaac catacggcaa tcatatgggt aactctgcc catcgtaga ggctgataac 900
    agtcatgagg ggtatggata cagcgatgaa gcagtgcgac gacatagaca agggcaacct 963
    tga
    <212> Type : DNA
    <211> Length : 963
30    SequenceName : SEQ ID 622
    SequenceDescription :

Sequence
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35 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgcgcccac tcttcctatc tttcgtttta ttcctatatt tgataaccgc ctgcagcaca 60
    ccggacaagt ctgcccgatg ggaaaatatc ggcacaatct caaacggcaa tattcataca 120
    tatatcaata aagacagcgt gagaaaaaac ggaaatctga tgattttcca agataaaaaa 180
40 gttgttacca atctaaaaca agaacgtttt gccaacaccc ccgcatacaa gactgccatt 240
    gccgagtggg aatccactg caacaacaaa acataccgct taagttcgct acaattgttt 300
    gatacaaaaa acacggaaat ttccacacaa aactacacag cctcttcct ccgccgatg 360
    agcatcctgt ccgggacatt aaccgaaaaa caatatgaaa ccgtatgcgg aaaaaaactc 420
    tga 423
45 <212> Type : DNA
    <211> Length : 423
    SequenceName : SEQ ID 623
    SequenceDescription :

50 Sequence
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    <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
    atgaacaaac ttttcattac cgccctgtcc gccctgcct tgtccgcctg cgccggcact 60
55 tgggagggcg cgaaacaaga caccgcccgc aaccttgaca aaacacaggc cgccgccgaa 120
    cgccgccgag aacaaacagg caacgccgct gaaaaaggct gggacaaaac caaagaagcc 180
    gtcaaaaaag gcggcaatgc cgtcggacgc ggcatttccc atctcggcgg aaaaatcgaa 240
    aacgccaccg aataa 255
    <212> Type : DNA
60 <211> Length : 255
    SequenceName : SEQ ID 624
    SequenceDescription :

Sequence
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65 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
    <400> PreSequenceString :
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tggcttgaaa tgacgcagat tcccagcgaa aaagcggcgg aaacgttcaa gctgccttat      120
gaattttatgg aacaaaatcg cgtgcagacc ctgttcggca accaagggtg gtataacggc      180
tttctcggca tcgggctggg gtggctcgcc tttgcccgtc cggataacgc ggtgtacggc      240
5 gcaacggtac tgtttctcgg ctctgcctcg attgccgcgc cgtggggcgc gttctcttcc      300
ggcaacaaag gcatactcgt caaacaaggt ttgcccgcac ttttggcagc ggcggcgggtg      360
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<212> Type : DNA
<211> Length : 372
10 SequenceName : SEQ ID 625
SequenceDescription :

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15 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
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cgtcaagacg gttcggtaaa atggttctgc ggacagcccg ttaagcgcga cgcgccacc      120
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20 tgccgcgacg cagcatctgc cgtttgcaca aaaaaccccg agtattaccc gaatcacggc      240
gaatggccga aaaacttcgt cattcccgcg caggcgggaa tccaggtctg tcggcacgga      300
aacttatcgg gtaaaaaggt ttctccggtc ctgagttcta gattcccact ttcgtgggaa      360
tga
<212> Type : DNA
<211> Length : 363
25 SequenceName : SEQ ID 626
SequenceDescription :

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30 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
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tggcccagca acaacacttc tgccggcggtg gcaacctcca ccgacattaa aggcacaaat      120
35 gttcaaaagc ttgaagtcaa aaacggcgtc gttaccggca caatggcttc aagcaacgta      180
aacaacgaaa tcaaaggcaa aaaactctcc ctgtgggcca agcgtcaaga cggttcggta      240
aaatggttct gcggacagcc ggttaagcgc aacgacaccg ccaccaccaa cgacgacgtc      300
aaagccgaca ccgccgcaa cggcaagcag atcgacacca agcacctgcc gtcaacagca      360
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40 <212> Type : DNA
<211> Length : 387
SequenceName : SEQ ID 627
SequenceDescription :

Sequence
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45 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
<400> PreSequenceString :
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50 tttgcccag accccgcgcc gcagtccgcc caaacgctga acgaaatcac cgttacccgc      120
acgcacaaaa cccaaaaaact cggcgaagaa aaaatccgcc gcaaaaacttt agacaagctc      180
ttggtcaacg acgaacacga cctggtgcgc tacgaccccgc gcatttcogt cgtcgaaggc      240
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55 ggcgcgtacg gcaacttcaa cgccaaccgc aacacttccg agccggaaaa cttttccgaa      420
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65 cgccaagacg tgagctaccg ccgccgctcc ggtgtcgaat acaaaaacga attggaacac      1020
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5      ttcgggcata tccgccaaaa caccgcgcaa tggactgccc attttgaaaa acaactcgac 1200
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      aactcggatt acagctattt cgaaaaactg tacgacccca aaatcctcgc ttccaaccaa 1320
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20     attaccaaca agcagtacta cacttgggaa cttttacgca gcatccgcga gttcggcagc 2340
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<212> Type : DNA

<211> Length : 2433

25      SequenceName : SEQ ID 628  
         SequenceDescription :

Sequence

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30     <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
      <400> PreSequenceString :
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      gttaccctgt acggcaccat caaaaccggc gtagaaactt cccgctctgt agaacacaat 120
      ggaggctcagg tggttagcgt tgaaccgggt accggcatcg ttgatttggg ttcgaaaaatc 180
35     ggcttcaaag gccaaagaaga cctcgtaaac ggcctgaaag ccatttggca ggttgagcaa 240
      aaggcatcta tcgccggcac tgactccggt tggggcaacc gccaatcctt catcggcttg 300
      aaaggcggct tcggtaaatt gcgcgtcggc cgtttgaaca gcgtcctgaa agacaccggc 360
      gacatcaatc cttgggatag caaaagcgac tatttgggtg taaacaaaat tgccgaaccc 420
      gaagcacgcc tcatttccgt acgctacgat tctcccgaat ttgccggcct cagcggcagc 480
40     gtacaatacg cgcttaacga caatgtaggc agacataaca gcgaatctta ccacgccggc 540
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      aatgattgcc tataccttcc cgtagccgta cagcaacaag acgcgaaact ggttgaagac 720
      aattcgcaca actctcaaac cgaagttgcc gctacettgg cataccgctt cggcaacgta 780
45     acgccccgcg tttcttacgc ccacggcttc aaaggctcgg ttgatgatgc aaaacgcgac 840
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<212> Type : DNA

50      <211> Length : 990

        SequenceName : SEQ ID 629  
         SequenceDescription :

Sequence

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      tacgtctccg ttatgggcga ccaagggttc ggcaacataa gcggcggacg ctactctatc 240
      gacgactga tacgcggcgg ctaccacaac aaccccgaaa gtgccaccca atacagctac 300
      cccgcctacg acactaccgc caccacaaa tccgagcgcg tctccagcgt aaccacttcc 360
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65     cgctccgcgc gactgtccgt caacggcacg ggcgactacc gcaacgaaac cctgctcgcc 480
      aaccccgcg acgtttcctt cctgaccaac ctcatocaaa ccgtcttcta cctgcgcggc 540
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ggcaccgtcc gcagccgcac cgaactgcac ctctacaacg ccgaaaccct taaagcccaa 660
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gtcgggcaaaa ccgtcaaagc ctcagaccgc ctgatggtcg atttctccga catcaccccc 840
5   tacggcgaca caaccgcccc aaaccgtccc gacttcaaac aaaacaacgg taaaaaaccc 900
gatgtcggca acgaagtcac ccgccgcgcg aaaggaggat aa 942
<212> Type : DNA
<211> Length : 942
SequenceName : SEQ ID 630
10   SequenceDescription :

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15   <400> PreSequenceString :
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ggcggtaaca cattcggcag cttagaccgc ggcacaggtg tggcgcgag catcgtcaaa 120
atggcggtag aaagccaatg ccgtgcggaa ttgaacaaac gcagcgaatg cggtttgacc 180
gcgctggcga tgagtgcga aaaacaggcg gaattgggaa acaagatttg cgcttgctgc 240
20   gcccaagaag caccacaacca gctgaccggc aacgatgtga tgcagatgct ggatccgtcc 300
acgcgcaatc aggcacttgc cgccctgacc gccaaaacgg ttccgcctg cttcaaacac 360
ctgtaccgct aa 372
<212> Type : DNA
<211> Length : 372
SequenceName : SEQ ID 631
25   SequenceDescription :

Sequence
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30   <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
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aaccgcgtccg agacggcggg cttcacgcaa aaccagattt tgagcgcgcc ttacggcttt 180
35   ggctgttcgg gcggcaatgc ttcccccgcg ctgctgtgga aaaatccgcc cgccgggaca 240
aaaagtttcg tctgaccgt ttacgataaa gacgcgcga ccggactggg ctggatgcac 300
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cagatttgcc ccacaggtt gacgccttcg tacacggcaa aaccgatgcc gtcagtctgc 480
40   aaccacgcca acacgcgcga aagcgcgggc tccgcgcgat tgtcgggcac ttcttcatcc 540
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<212> Type : DNA
<211> Length : 561
SequenceName : SEQ ID 632
45   SequenceDescription :

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50   <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491
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atcatgaacg agagaaacca gcccagggtg cagtggatg ggtcatattc aataaaggac 180
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55   ttcaacaata gcgatgagct tgtttctcga caaagcggtg ctgccgtttt tggcacagcc 300
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65   ccgagcatcg atgtgcggac aagaaatacg gggactgccg gcattctatc ttattgggct 900
aagtgggaca ttaaagatac cgggcagatt ccagtcaagc tcagcttgac gcaagtcaaa 960
gcaggccgct gcgtcaacaa agataacccc aataagaata ccaaaacctc ttccccgcga 1020

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ctgactgcc cccgctgtg gttcggagct gggcaagatg gtaaggcgga gatgtattcc 1080
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tgcttctccg gaaaaggggt gcgcaccctg ctgatgaacg atttggacag cttggatatt 3060
35 accggcccg tgtgcggtat gaaacgaatc agctggcggt aagtcttcta ctga 3114

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<212> Type : DNA

<211> Length : 3114

SequenceName : SEQ ID 633

40 SequenceDescription :

Sequence

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45 <213> OrganismName : Neisseria meningitidis serogroup A strain Z2491

<400> PreSequenceString :

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gagcgcgtat ccatacaaaag tttggctgga gccaaaccaag atacgcacgc ctatcatatg 180
accagcgcg acattaaaaa aatccgcagt gcaaaactcg tcttgattaa cggcttagga 240
50 cttgaagctg ccgacatcca acgtgccgtc aaacagagca aagtatccta tgcgaagcg 300
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55 ctcaaaaaac tgcacagtga cgcacaagc gcatttaatg ccgtccctgc cgccaaacgc 600
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atccgacaaa tcaaacgcga aggcataaaa gccgtattta ccgaaaatat caaagacacc 780
cgcatggttg accgcatcgc caaagaaacc ggtgtcaacg tcagcggcaa actgtattcc 840
60 gacgcactcg gcaacgcacc cgcagacacc tacatcgga tgtaccgcca caacatcaaa 900
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<212> Type : DNA

<211> Length : 927

SequenceName : SEQ ID 634

65 SequenceDescription :

Sequence

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   ctgactacag agcaaaaagc tgcacagaat caagtttcag cgttacaggc tcaagtaagt      180
   tcactacaat ctgaacaaga taaactgacc gcaagaaata cagaacttga ggcactttca      240
   aagcgatttg agcaagaaat taaggctcta acaagtcaaa ttgttgctcg taatgaaaaa      300
   ttaaaaaatc aagctcgtag tgcttataaa aacaatgaaa cttctgggta cattaatgca      360
10  cttttgaatt ctaaatcaat ttctgatgtt gtaaaccgtt tagtagcaat taatagagct      420
   gtctctgcta acgttaaatt gttagaacaa caaaaagctg ataaagtttc ccttgaagaa      480
   aagcaagctg ctaaccaaac agctattaat accattgccg ctaatatggc aatggctgaa      540
   gaaaaccaaa atacattacg tactcaacaa gctaatttgg aagctgcaac tgcaaattta      600
   gctctccaat tagcatctgc tactgaagat aaagctaatt tggtagctca aaaagaagct      660
15  gcagaaaaag ctgctgctga agccttagca caagaacagg ctgctaaagt taaggcacaa      720
   gaacaggctg cacaacaagc agcatctgtt caagcagcaa aatctgctat tactccagca      780
   ccacaagcta ctccggcagc gcaaagtagt aatgctattg aaccagctgc actcacggct      840
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20  ggtggtcaat gggcttatag tgctcaagca gctgggtatc gtactgggtt aacgccgatg     1020
   gtaggtgcga ttgccgtttg gaacgatggt ggttatggac atgtcgccgt tgtagttagag     1080
   gttcaaaagt cctcaagtat tcgtgtgatg gagtctaact acagtggtag acagtacatt     1140
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25  <212> Type : DNA
    <211> Length : 1197
        SequenceName : SEQ ID 635
        SequenceDescription :

30  Sequence
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   cttagcctta ttatccttgt tattattatt ggtggctctt tgtttacctt ctacattagc      120
   agtgcctcga aactgtcaga agcccagtta aactcaacaa actctagctt ggtttatgac      180
   ggtaataaca atctgattgc tgatttgggt tctgaaaagc gtgaaaatgt aacagctgat      240
   agtatcccta ttaatctagt taatgctatt acctcaattg aagataaacg tttctttaac      300
   catcgctggg tagatcttta tcgtattttt ggtgctgcct ttcataatct aacgagtcag      360
40  accactcaag ggggggtcaac gcttgatcag caactcatta aactagccta tttttctact      420
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acaacaacag cttctagcca aacgacttca gatgatacta gtagtagcaa tgatacaagt 2100
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cattaa 2166
<212> Type : DNA
5 <211> Length : 2166
    SequenceName : SEQ ID 636
    SequenceDescription :

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10 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
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    15 gtcctagttg ataatgtttt tacttatact gtaaaatcag gtgacacttt aagcacaatt 180
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    20 acaccatctg atgttccaac gacaccatta gcatctgcaa agccagatag ttttgtgaca 480
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    caaaagcagc cagaagtatc acaagaagca gttccaactc ctaaagcagc tgaacacgact 600
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    <211> Length : 1182
35 SequenceName : SEQ ID 637
    SequenceDescription :

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40 <213> OrganismName : Streptococcus pyogenes strain MGAS8232
    <400> PreSequenceString :
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    actcaggcaa aacaagtctt agcagagggt aaagtgaagg tgggtgacaac tttctaccct 120
    gtttatgaat ttacaaaagg ggttatgggt aatgatggcg atgtttccat gcttatgaaa 180
    45 gcaggaacgg aacctcatga ttttgagcct tctacaaaag acattaaaaa aatccaagat 240
    gcagatgcat ttgtttatat ggatgacaat atggaaactt ggggtttctga tgtgaaaaaa 300
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<212> Type : DNA  
<211> Length : 1548  
SequenceName : SEQ ID 638  
SequenceDescription :

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Sequence

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&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

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&lt;212&gt; Type : DNA

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&lt;211&gt; Length : 1125

SequenceName : SEQ ID 639

SequenceDescription :

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&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

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&lt;211&gt; Length : 162

SequenceName : SEQ ID 640

SequenceDescription :

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<212> Type : DNA

<211> Length : 1488

10 SequenceName : SEQ ID 641

SequenceDescription :

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<211> Length : 921

35 SequenceName : SEQ ID 642

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65 <213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
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accaaggagt actgtgcaca gctgcgtgct ggtattttcag ccagtcctcat agagaagacg 2160
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5 <212> Type : DNA  
 <211> Length : 2277  
 SequenceName : SEQ ID 645  
 SequenceDescription :

## 10 Sequence

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<213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
 <400> PreSequenceString :

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45 <212> Type : DNA  
 <211> Length : 1797  
 SequenceName : SEQ ID 646  
 SequenceDescription :

## 50 Sequence

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<213> OrganismName : Treponema pallidum subsp. pallidum str. Nichols  
 <400> PreSequenceString :

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	tccgtgctcg	gcacaaccaa	tcgctttaac	attattaacc	cgcggggcaa	cctgttgaat	1620
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 1797

20      SequenceName : SEQ ID 647  
          SequenceDescription :

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25	<213> OrganismName : SARS coronavirus Frankfurt 1	
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30	ccattttatt ctaatgtttac aggggttctat actattaatc atacgtttgg caaccctgtc	240
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	aagttgcctc ttgggtattaa cattacaatc tttagagcca ttcttacagc cttttcacct	720
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<212> Type : DNA

<211> Length : 3768

25 SequenceName : SEQ ID 648

SequenceDescription :

Sequence

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<211> Length : 3768
30 SequenceName : SEQ ID 649
SequenceDescription :

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Sequence
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

35 SequenceName : SEQ ID 650

SequenceDescription :

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5  aagaaccagt gtgtcaattt taattttaat ggactcactg gtactgggtgt gtttaactcct 1620
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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

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40  SequenceName : SEQ ID 651
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## Sequence

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3768

45      SequenceName : SEQ ID 652  
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SequenceName : SEQ ID 662

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ctgccgaata ccaactatcg taacaatagt cagggtgtat ggttgggtta taactccgga 720  
aaccatcggt ttggcctctc gcttgatcgc tacagactcg cgacacaaac ttactatgag 780  
gatccagacg gaagttatga ggcatcttag gtcaaaatac ctaaaactga acgagagaaa 840  
10 gttgggggat tctatgacac agacgtggac ggtgactatc taaaaaaaat tcatttcgac 900  
gcgtatgagc agaccatcca gcgccaattt gccaacgaag taaaaacgac acagcctggt 960  
cccagtcgga tgattcaggc totgaccgtt cataacaaga ctgacaccca tgataagcaa 1020  
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accggtgcac agtacaacaa agataggggt agccaaaggt ccggtggcat gacctcaagc 1140  
15 aaatctctga ccggcttcat taataaggaa acacgaactc gctcctatta tgagtcagag 1200  
caaatgacag tctcactatt cgcacaaaat gactggcaat tcgccgatca ctggacatgg 1260  
acaatgggag ttccgcaata ctggctttct tcaaaagtga cgcgtgggtga cggagtatca 1320  
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atggtaacat ctacaagcct gcgctattca ggtttcgata acctggaggt acgcgctgcg 1440  
20 ttccgcgaag gctacgtatt tcccacactc tccagctttt ttatgcagac atctgcgggc 1500  
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aaagattata ttgcaagtct gatctgtgat ggcagtagat tttgcaatgg taacaccaac 1680  
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25 gaaataagcg cggaaatataa tggctggggt ttctcgccat atatcagtg caatttaatt 1800  
cgctcgcaat atgaaacttc aacattaaaa acaactaata cagggtgaacc agcgataaac 1860  
ggacgtatag ggctgaaaca tactcttgtg atgggtcagg ccaacataat ctctgatgtt 1920  
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ggctgggcca ctctcaactt tgcagtaaat acagaaattcg gtaacgagga tcagtaccgg 2040  
30 attaacctgg cactcaataa cctgacagac aaacgctacc gtacagcaca tgaaactatt 2100  
cctgcagcag gttttaatgc agctataggt tttgtatgga atttctga 2148

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 2148

SequenceName : SEQ ID 669

35 SequenceDescription :

Sequence

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<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
40 atgacaaaaa tgagtcgcta cgccttgatt accgcgctgg cgatgtttct cgccgggtgt 60  
gtggggcaac gtgaacctgc accggtagaa gaagtgaac cagcgccgga acaaccagcc 120  
gagccacaac agcctgtccc cacagtggcc tcggtgcca cgatcccgca gcagccaggc 180  
ccaattgagc acgaagatca aactgcaccg cctgcgccgc atattcgcca ttatgactgg 240  
45 aatggcgcaa tgcagccgat ggtcagtaag atgcttgggg ctgacggggg gactgcgggt 300  
agcgtcctgc tggttgatag cgtaacaac cgtactaacg gttcgtgaa tgccgcagaa 360  
gcgaccgaaa cgctgcgaaa tgcgctggct aataacggga aatttaccct ggtttccgcc 420  
cagcagctgt cgatggctaa gcaacagtta ggtttgtcgc cgcaggatag tttaggcacc 480  
cgtagtaaa ccataggcat tgcccgaat gtcggcgctc attacgtgct gtactccagc 540  
50 gcctctggca acgttaacgc tccgacccta caaatgcagc tgatgctggg gcagacgggc 600  
gaaattatct ggtcaggtaa aggtgccgtt tcgcagcaat aa 642

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 642

SequenceName : SEQ ID 670

55 SequenceDescription :

Sequence

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<213> OrganismName : Escherichia coli O157:H7  
<400> PreSequenceString :  
60 atgaaaagca agtactggc acttttaatt cctgccctgc tcggcgagg tgctgcacat 60  
gcagccgaag ttataataa agacggcaac aaattagatc tgtatggcaa agttgatggc 120  
ctgcattatt tttctgataa ttcagcgaaa gatggcgacc agagctatgc gcgtctgggt 180  
tttaaaggcg aaacccaaat taacgatcaa cttactggct acggtcaatg ggaatacaat 240  
65 attcaggcaa acaacactga atcttcaaaa aaccagtcac ggaccgtct ggcatttgcc 300  
ggactgaaat tttcagatta cggttctttc gattacggac gtaattatgg gctggaccga 360  
tatgctgcct ga 372

<212> Type : DNA  
<211> Length : 372  
SequenceName : SEQ ID 671  
SequenceDescription :

5

Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

10	atggcaacac caaatcccct tgagccggta aaaggtgccg gtacca.ctct gtgggtttac	60
	aacggcaagg gtgatgctta tgcaaacccg ttgtcagacg atgactggca gcgactggct	120
	aaggtgaagg atctgacgcc gggcgagatg acggcagaac cctacgatga taactacctg	180
	gatgatgaag acgcgactg gaccgcgacc gggcaggggc agaagt.ctgc aggagatacc	240
	agttttacgc tggcctggaa accgggagaa gaaggtcaga aagggc.ttat aggctggttt	300
15	gaaagcgggg atgtgcgggc ctataaaatc cgtttcccaa atggca.cggg ggatgtgttc	360
	cgtggctggg tcagcagtat cggtaaggcc gtgacggcga aagaagtgat caccgcgacg	420
	gtgaaagtca ctaacgtggg caaaccttcc gtggcggaag aacgca.gcga aattacgccg	480
	gccactgcaa ttaaggtgac accgacatcc ggtacgggtg caaaaaggaa aacaaccacc	540
	ctgactgttt ctttttgagcc ggaaagtgc accgacaaga cgttcagagc ggtttccgcc	600
20	gatccgtcga aagccaccat tagtgtgaaa gatattgaca ttacggtaaa cggcgtggcg	660
	acaggtgaagg tgcagatccc tgtggtgagc ggaaatggtc agttcgcgcg agtggctgaa	720
	gtcaccggtta ctgaagcggg cgctgcaggg taa	753

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 753

25

SequenceName : SEQ ID 672

SequenceDescription :

Sequence

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30 &lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

30	atggcaacac caaatcccct tgagccggta aaaggtgccg gtacca.ctct gtgggtttac	60
	aacggcaagg gtgatgctta tgcaaacccg ttgtcagacg atgactggca gcgactggct	120
	aaggtgaagg atctgacgcc gggcgagatg acggcagaac cctacgatga taactacctg	180
35	gatgatgaag acgcgactg gaccgcgacc gggcaggggc agaagt.ctgc aggagatacc	240
	agttttacgc tggcctggaa accgggagaa gaaggtcaga aagggc.ttat aggctggttt	300
	gaaagcgggg atgtgcgggc ctataaaatc cgtttcccaa atggca.cggg ggatgtgttc	360
	cgtggctggg tcagcagtat cggtaaggcc gtgacggcga aagaagtgat caccgcgacg	420
	gtgaaagtca ctaacgtggg caaaccttcc gtggcggaag aacgca.gcga aattacgccg	480
40	gccactgcaa ttaaggtgac accgacatcc ggtacgggtg caaaaaggaa aacaaccacc	540
	ctgacggttt ctttttgagcc ggaaagtgc accgacaaga cgttcagagc ggtttccgcc	600
	gatccgtcga aagccaccat tagtgtgaaa gatattgaca ttacggtaaa cggcgtggcg	660
	acaggtgaagg tgcagatccc tgtggtgagc ggaaatggtc agttcgcgcg agtggctgaa	720
	gtcaccggtta ctgaagcggg cgctgcaggg taa	753

45

&lt;212&gt; Type : DNA

&lt;211&gt; Length : 753

SequenceName : SEQ ID 673

SequenceDescription :

50 Sequence

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&lt;213&gt; OrganismName : Escherichia coli O157:H7

&lt;400&gt; PreSequenceString :

55	atgggctgga cggatatgct gctgaattt ggcggtgact cttata.ccaa tgcagacaac	60
	tttatgactg gtcgtgccaa tggcgtcgcg acttatcgta atactgattt cttcggctctg	120
	gtaaatggtc tgaacttcgc ggtgcagtat caaggtaaca acgaagggtgc cagtaatggt	180
	caggaaggca ccaacaacgg acgtgatggt cgccatgaaa acggtgacgg ctggggctctt	240
	tccacaacat atgatttagg catgggcttt agcgtgtgtg cggcat.acac ctcttctgac	300
	cgcaccaatg accagggttaa ccatactgcg gcgggtgtgtg ataaag.caga cgcgtggact	360
60	gctgggctaa aatacagatgc taacaatatt tacctggcaa ccattg.attc agaaacgcgt	420
	aatatgaccc cgttttgcca cagcgattat gctgttgcaa acaaaa.ccca gaactttgaa	480
	gtcactgcac agtaccagtt tgattttggt ctgctgccgg cagtct.cttt cctgatgtct	540
	aaaggccgtg acctgcacgc tgccgttggt gcagacaacc cggcaggtgt tgatgataaa	600
	gatctgggtta aatacgcgca tgttggcgcg acttactatt tcaata.aaaa catgtccact	660
65	tatgttgact ataaatcaa cctgttggat gaagatgaca gtttct.acgc tgccaacggc	720
	atctctaccg atgatattgt cgcttttaggt ctgggtttatc agttct.aa	768

&lt;212&gt; Type : DNA

<211> Length : 768  
SequenceName : SEQ ID 674  
SequenceDescription :

5 Sequence  
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<213> OrganismName : Haemophilus influenzae Rd  
<400> PreSequenceString :  
10 atgggggttta ttatgaaact aactaaaaca gcattatgta ctgcactttt tgccaccttt 60  
acttttttcag cgaacgcaca aacttatcct gatttgccag tggggatcaa aggaggaaca 120  
ggcgcatata ttggcgacac agtttatgtg ggattaggtt ctgggtggcga taaattctat 180  
accttagacc taaaagatcc ttcagcaca tggaagaaa ttgtacatt tccgggtggc 240  
gaacgcaatc aacctgttgc agcgcagtg gatgaaaac aaaaagatga aatcgagca 300  
caaaaaaatg aaaaaggcga acttcaactc gttaatgacg cttatcgcta taaccaagc 360  
15 gataatactt ggtgaaact tctactcgt tctccccgtg gtttagtagg atcaagtggg 420  
gcactctcag gagataaagt ttatatctta ggcggctcta atctctctat atttaattggc 480  
ttcttccaag acactgtggc agcaggtgaa gataaagcga aaaaagatga aatcgagca 540  
gcttatttcg atcaacgtcc agaagattat ttctttacaa cagaattatt gagctatgaa 600  
ccatcaacca ataaatggcg caatgaaggc cgtattccat tctctggctg tgctgggtgca 660  
20 gcctttacaa ttcaaggtaa tgagctagtg gttgtcaatg gcgaaattaa acctggactt 720  
cgccaccgtg aaacccatca aggtaaattc actgctaaaag gtgtgcaatg gaaaaactta 780  
cctgacttac ctgctccaaa aggcacaaatc caagatgggt tagctgggtgc gctttcaggc 840  
tatagtaacg gtcatatttt agtcactggc ggcgcaaat ttccagggtc aatcaaacaa 900  
25 ttcaagaag gaaaacttca cgcacataaa ggtttaagca aagcttggca taacgaagtt 960  
tatacggtga ataaggttaa atggcgcatg gttggggaat tacciaatga tattgggtat 1020  
gggtttttctg tatcttcaaa caataaagtt ttactgattg gcggtgaaac tgatggaggt 1080  
aaggctttaa ctacggtcaa agcaataagc tatgacggtg aaaaattaac catcgaataa 1140

<212> Type : DNA  
30 <211> Length : 1140  
SequenceName : SEQ ID 675  
SequenceDescription :

35 Sequence  
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<213> OrganismName : Haemophilus influenzae Rd  
<400> PreSequenceString :  
40 atggggagaac aatatatgct tacgacgata ctcagcttcc tcattgtaac cactgtgggt 60  
gcgtatgttt cttgggttaa aacaaaagg gatgatttaa aatcttcaaa agggatattt 120  
ttggcagggc gtgggttaaag cgggttagta attggctgct caatgggtgct gacatcgctt 180  
tcaactgaac aacttatcgg tgtcaatgcg gtgtcctata aaggtaattt ttccgtgatt 240  
gcttggacag ttccaacggt tattccgctt tgtttcttgg ctctttatat aattggctgg 300  
ctataa 306

<212> Type : DNA  
45 <211> Length : 306  
SequenceName : SEQ ID 676  
SequenceDescription :

50 Sequence  
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<213> OrganismName : [Helicobacter pylori, strain J99  
<400> PreSequenceString :  
55 atgaaaaatc aacacaaaaa tcccctaaca aaagctttaa tgaaaaactta tccatataac 60  
cattttttat ttttctgctt tattctagga gcgtttttat taggtttgct cagtccagct 120  
tatgctttta gtattatcac cactaaagaa attgacgcta atttgcttaa tggagcgata 180  
gaaagcaggg tgggtgttag caagagggtg tttaaagtag aagctcatgg gttttatttt 240  
agaaacaatg cgactaacag catagatata gaaatcacca gtcttttaag agacaatcaa 300  
tcgtttcctt tgactagcag tgctaaaacc agtttaaaaa tacctcctaa cgccaagatt 360  
aaaaaatcca ctatccttgt tttgaaaggc gagaacgctg aagaagtggc taagatttta 420  
60 ggcgttagca aagaagaata ccaaaagcta gaaaacatcg ctcaaaccaa agcggctaata 480  
gaccctatgt atgctaacac gccttttagt aatggttctg atagttcctt ttacgataac 540  
aatcctaata gccctagcaa taacgctatc aatggcaag atggcgcaaa tgggagtaac 600  
ggctatgggg caaatggcaa tgatggggta aatgggatca gtgggagtaa tgggtgcaaat 660  
gggagtcatt caaataataa tgcaataggc agtggatttg atacagatgg cgtgttaggg 720  
65 gtggatgggg tgaatggcto tagttcttca agtggcgct ctgtaggggg ttatgagaat 780  
aatttcacta atcatggctc tactaacaat aacacaggag ggtatgacaa ttttaataat 840  
ggcagctcaa gtgggtgggag tttaggggaat ggggggcttt tccctattcc ttttggtaat 900



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5  ggagacacaa acaattccaa taattccact aacaccacta gcccactaa tggcagtagt 960
   tctaataacg ccactaatcc tagttcgcaa gaaaacaatt actccagcca gtattgtaaa 1020
   gtgccagagt taagcccaaa caacacgatg aaactagatg ttatcgctaa agatggctct 1080
   tgtatttcta tgaacgcttt aagagatgac actaatgctg cttatagata cgattttgaa 1140
   gccggtaaag ccataacgca aacgcaatac tactatgtag atagggaaaa taaaacgcaa 1200
   aatatcggtg gtttgtgtgga tttacaaggc gctcaatacg ccatgcaact ttacaaagat 1260
   gacagcaaat gcgccttaca aaccacgagc gataaagggt atgggtatggg gaaaacgcaa 1320
   accttttcaa ctgaaatcgt gtttcgtggg atggacaatt taatccatgt cgctgtgcct 1380
   tgcagcgatt atgcaagggg gcaagacagg attgttaggt atgaaaaaaa tgataaaacc 1440
10  caaaccttaa cgcttatagt ggatcagtat tataatgatc ctaacaaccc taacaagcaa 1500
   gagattttta atcgtgggat tgccacccaa ttaagctcgc aatatcaaga atttgcatgc 1560
   ggtcaatggg aatacaatga cgctaaatta gaagccaaaa gacctacaat gctaaaaagc 1620
   tataacaagc ttaatggaga atgggtagaa gttacgcctt gtaattttga agcagggatt 1680
   aaaagcgggt cgggtgttag cccttatgtg atgggcgtgc ctagtcttaa agtcttaagc 1740
15  gatattacta caagccatta ttttaggata gaaaggaaaa attatggtga gagagaacaa 1800
   tgccaaaaaa tttatggagt caatcgttgc caaccgcaat attccatact gatcctagta 1860
   tcaccgattg gagcgccact taaaaacca ctaccacca aaccactcaa ccttatttac 1920
   gccagccca agataatgaa aaacacccca caacctataa tcttatcacc actcaaacca 1980
   ccatcaacag gactcaaagc gttttga 2007
20  <212> Type : DNA
   <211> Length : 2007
       SequenceName : SEQ ID 677
       SequenceDescription :

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25  Sequence
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     <213> OrganismName : Helicobacter pylori, strain J99
     <400> PreSequenceString :
30  atgcctgtta taagagtttt agtaatgctt gcaacaatga tgatgaaatt agtaaaaaacg 60
   gcaaaagaaa agaaagtttt taagaatgtg ggaatatcta taatggggat tgcttttttg 120
   gaagcgataa aagactcgat aaaaaaacia attaaaaaaa gcgattggat atgcggggaat 180
   gttaaagactg cggtatgatta tttaaaaacg catcctaact catggtttaa ttcagcaata 240
   ggtgtaacag cgataacagc catgcttatg aatgtgtgtt ttgctgatga ccaatccaaa 300
   aaagaagtgg ctcaagctca aaagggaagct gaaaacgcta gggatagagc gaacaagagt 360
35  gggatagaac tggaacaaga agagcaaaag acagaacaag aaaaaacaaa gacagaacaa 420
   gaaaaacaaa agacagaaca agaaaaacaa aagacagaac aagaaaaaca aaagacagaa 480
   caagaaaaac aaaagacaag caatatagag actaacaatc aaataaaagt agaacaagaa 540
   caacaaaaga cagaacagga aaaacaaaag acaacaataa cgcaaaaaga tttgggttaac 600
   aaagcagaac aaaattgcca agaaaatcat aatcaattct ttattaaaaa attaggaatt 660
40  aaggctggca ttgctataga aatagaagct gaatgcacaa cccctaaacc caaaaaaac 720
   aatcaaaccc ctatccagcc aaaacacctc ccaaactcca aacaacccca tcttcaaaga 780
   ggatcaaaag cgcaagagct tatcgcttat ttgcaaaaag agctagaatc tctgccctat 840
   tcacaaaaag ctatcgctaa acaagtggat ttttataggc caagtcttat cgcttattta 900
   gaactagatc ctagagattt taacgctaca gaagcaatggc aaaaagaaaa tttaaaaata 960
45  cgctctaaag ctcaagctaa aatgcttgaa atgaggagtt taaaaccaga ccacaaagcc 1020
   cacctttcaa cctctcaaag ctttttgcct gttcaaaaaa tatttgctga tgttagtaaa 1080
   gaaataaaag tagttgctaa taccgagaaa aaagtagaaa aagcgggtta tggttatagt 1140
   aaaaggatgt ag 1152
50  <212> Type : DNA
   <211> Length : 1152
       SequenceName : SEQ ID 678
       SequenceDescription :

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55  Sequence
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     <400> PreSequenceString :
60  atgaactacc ctaatctacc taacagcgct ttagagataa gccaacagcc agaagtgaag 60
   gaaatcacta acgagctttt aaagcaatta caaacgcgtt taaggagcaa cgcgcatttt 120
   agcagagcaag tggaaattaag ccttaaatgc atcttagga ttttagaagt gcttttgagt 180
   ttggattttt ttaagaatgc gaatgagatt gatagcagtt taagaaattc cattgagtgg 240
   ctgactaacg ccggcgagag cttgaaatta aaaaatgaaag aatacagagc ctttttttagc 300
   gagtttaata cgagcatgca tgccaacgag caggaaagtaa ccaatacctt aaacgcctaac 360
65  gccgagaaca ttaaaagcga aattaaaaag ctagaaaatc aattgataga aaccacgaca 420
   agacttttaa cgagctatca aatcttttta aaccaagcca gagataacgc taacaaccaa 480
   atcacaaaaa acaaacacca aagccttgaa gcgattacac aagctaaaaa caacgctaata 540
   aatgaaataa gcaacaatca aacgcaagcg ataactaata tcaccgaagc gaaaacgaac 600

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gctaataatg aaataagcaa caatcaaacg caagcgataa ctaacattaa cgaagccaaa 660
gaaagcgcta caacgcaaat aaacgccaat aagcaagaag caataataa catcacgcaa 720
gaaaaaaccc aagccacaag cgagatcacc gaagcgaaaa agaccgatca ttatcaaaac 780
attgatTTTT ttgagtttga ataa 804
5 <212> Type : DNA
  <211> Length : 804
    SequenceName : SEQ ID 679
    SequenceDescription :

10 Sequence
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  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
15 gtgaattttt.tttcaaagga tttgttttaa aaagtaactc cttttttttt.aagcgtttat 60
   tttttaagcc ccacccttac gcaagccaaa agcgcgtttt atgtggcttc tcaataccag 120
   gtggggaaaa tgatcatgaa aaaatacaac gatctcaaac gcacgattga aggggcgagc 180
   tttcttttag gctgggggat taaccccaact aattactggg ttatttcgcg ctattacttt 240
   tttatggatt acgggaatgt cattctcaat aaaagaacgg gcgctcaagc gaacatgttc 300
   acttacggct ttggagggga tttgatcatg gaatacaata aaaacccttt gtatgtat tt 360
20 tctctttttt atggcatgca agttgctgaa aacacatgga cgatttccaa acacagcgcg 420
   aatttcatca ttgacgactg gcgcagcatt caagggtttt cgctcaaaac ttcaaatttc 480
   aggatgtttg gtttagtggg gtttaaattc caaacctgtc tattccacca tgacgctagt 540
   attgaagtgg ggatcaaatg gccttttgct tttgaatacg actcaccctt tgtaaggcct 600
   tttctgtctt ttatttcgca cactttctac ctttaa 636
25 <212> Type : DNA
  <211> Length : 636
    SequenceName : SEQ ID 680
    SequenceDescription :

30 Sequence
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  <213> OrganismName : Helicobacter pylori, strain J99
  <400> PreSequenceString :
35 atgaaaaaat ttaccctatc gctatttttg tgttgacact tacttaacgc tgaagaggat 60
   attttttagga acaacacaaa tgaaactgat cttacaaatt cttttgaaca tggcaaaagaa 120
   aacaacaatc ttatccagc aaaatccgat agtttagaaa gtttcaaaga acaagaaaac 180
   aaagaaaaag ccaaacagct tatggattta aaggccttac agagcgtgta tttttctaaa 240
   aatagaaaaat tgcaagacaa taatttcaat gtcttgtatg tggcaggcaa caccaacaaa 300
   atccgcttac gctatgcgat gactaccacc tttatttttg ataatgatcc tattatctat 360
40 ttgagtttag gagatccatg cgattttgaa ctacttacc ccactaatga tcattacgat 420
   ttgtctaaca tgctagtgat taagccgtta cttatagggg tggatacgaa cctaaccgta 480
   gtccggagcga gcggcacaaat ttatacctta ttatttgttt ag 522
  <212> Type : DNA
  <211> Length : 522
    SequenceName : SEQ ID 681
    SequenceDescription :

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50 <213> OrganismName : Mycoplasma pneumoniae
  <400> PreSequenceString :
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   agcaacagta gtacgagtgg ggtaacgacc cagggacaat cccaaaatgc atccagtaac 120
   gaaccgcac cgacgttttc gaatgtcggc gttggtctca aagccaatgt caacggcacc 180
55 ttaagtgggt cgcaactac gcctaatacag caaggcactc cctgggttaac cctcgaccaa 240
   gccaacctcc agctctgaac gggcgcgggg tgaaggaatg ataagaacgg acaaagtgc 300
   gaaaactaca ccaatttcgc gagtgcctaag ggcagtacga accagcaggg ttcaacaaac 360
   ggtggatcag cgggcaaccc cgactcggtt aagcaggata aggctgataa aagtgggtgat 420
   tcggtaacgg ttgcagaagc cacatcgggc gacaacttga cgaattacac caacctccc 480
60 ccaacatcac cccacatcc gactgaccga acgcgtgtc attcaccaac aagaacaaac 540
   cccacgggtg cgagctgttc ctgcgcggcc tgttgggcag catcccgggt ttggtcaata 600
   agagtgggca agatgataac agtaagttta attccaccga ccaaaaatgg tcttacaccg 660
   aattaa 666
  <212> Type : DNA
  <211> Length : 666
    SequenceName : SEQ ID 682
    SequenceDescription :
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## Sequence

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5 <213> OrganismName : Mycoplasma pneumoniae  
 <400> PreSequenceString :  
 gtggatgata taaccgcgcc tcaaaccagc gcggggctcgt ccagcggaac tagtacgaac 60  
 acaagtgggt cgcgttcctt tctcccgacg ttttcgaatg tcggcggttg cctcaaagcg 120  
 aatgtccagg gcacctcgg gggcagacag acgacgacta cggggaacaa tattcccaaa 180  
 tgagccaccc tcgaccaagc caacctccag ctctgaacgg gggcgggggtg aaggaaatgat 240  
 10 aagactacaa gtggttcaac cggcaatgcc aatgacacca agttcacgag tgctacggggc 300  
 agtgggagtg ggcagggcag ttcttcaggt acaaatactt ccgcggggaa tcctgatggg 360  
 cttcaggctg ataaagttga tcaaaacggt caggtgaaaa caagcgttca agaagccact 420  
 tcaggggaca acttgacgaa ttacaccaac ctcccccccg ccaacctcac cccacccgct 480  
 gattgaccga aocgcgtgtc attcaccaac aagaacaacg .cgcagcgcgc ccagctgttc 540  
 15 ctgcgcgggc tgttggggcag catcccggtg ttggttaata agtccggcca agatgataac 600  
 agtaagttta aggcggaggga ccaaaaatgg tcctacaccc acttacagtc ggaccaaac 660  
 aaactgaacc tccccgctta cggcgagggtg aatgggttgt tgaatccggc gttggtggaa 720  
 acctattttg ggaacacgcg agcgagtggg tcgggggtcca acacgaccag ttcacccggt 780  
 atcggtttta aaattcccga acaaagtggc acaaacacaa cgtcgaaggc tgtgctgac 840  
 20 acccccggtt tgggttgatt gccgcaagac gtgtgtaaca tcgttgctcag tggcaccagc 900  
 ttcagcttcc agctcggcgg gtggttagtt acgttcacgg actttatcaa acccccgct 960  
 gggtacctcg ggctccagtt aacgggtctc gatgtaagtg aagcgaccca aaggaggtta 1020  
 atttgggcca agcggccctg agcggccttt cgtggcagtt gggcgaaccg gctgggccc 1080  
 gtggaagtg tgtgggattt caagggggtg tggcgggatc aagctcagtt ggccgcgcaa 1140  
 25 gcagctacaa gtagtaccac caccacgcga acaggggcta ccttacggga gcaccgcaat 1200  
 gccctcgcgt accaaattag ctataccgac aaggattcgt acaaggcttc cactcaagg 1260  
 tcgggtcaaa ccaattccca aaacaattcg ccctacctcc attttattaa acctaagaaa 1320  
 gtcgaaagca cgaccacaact cgaccagggc ttaaaaaaac tgttggacc caaccaggt 1380  
 cgcaccaagc tgcgcgaaag ctttggtaaa gaccattcca cccagcccca gccccaatcg 1440  
 30 ctcaaaacaa cgacaccggt atttgggagg agtagtggtg acctcagtag tgtgtttagt 1500  
 ggtgggggtg ctggaggggg ttcttcaggc tcaggtcaat ctggcggtga tctctcccc 1560  
 gttgaacggg tgagtgggtc ctaa 1584  
 <212> Type : DNA  
 <211> Length : 1584  
 35 SequenceName : SEQ ID 683  
 SequenceDescription :

## Sequence

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40 <213> OrganismName : Mycoplasma pneumoniae  
 <400> PreSequenceString :  
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 ttcaacctcg cgggggtcgggt gctcgaccag gtgttggtatt atgtgccctg gattgggaat 120  
 gggcacaggt atgggaataa ccaccggggc gtggatgata taaccgcgc taaaaccggc 180  
 45 gcggggctcgt ccagcggaac tagtacgaac acaagtgggt cgcgttcctt tctcccgacg 240  
 ttctcgaatg tcggcggttg cctcaaagcg aatgtccagg gcacctcggg tggcagtcag 300  
 acgacgacta cggggaaga tattcccaaa tgaccacccc tcgacccagc caacctccag 360  
 ctctgaacgg gggcgggtg aaggaaatgat aaggcttcaa acaacaaaag tgacgaaaac 420  
 cacaccacct ttaaaagcgc tacgggcagt ggccagcagg gtggtttctac aacgggtgg 480  
 50 tcagcgggca atcccgaatc gttaaaagcag gataagatta gtaaatcagg tcagaactta 540  
 accacgcagg acggcgcgcc ccagtttaatt tcgacgacgg aatccgcgtc gaattatgat 600  
 cactcccccc ccaacctcac cccacatcc gattgaccga acgcgtgtc attcaccaac 660  
 aagaacaacg cgcagcgcgc ccagctcttc ctccgcggct tgttggggcag catcccggtg 720  
 ttggtgaatc gaagtgggtc agatgattcc aacaaattcc aagccaccga ccaaaaatgg 780  
 55 tcttacaccg acttaaaagtc ggacaaacc aagctcaacc tccccgctta tgggtgaagt 840  
 aatgggttgt tgaatccggc gttggtggaa acctattttg ggacgacgcg agcgggtgg 900  
 tcgggggtcca acacgaccag ttacccgggt atcggtttta aaattcccga acaaaataat 960  
 gattcgaagg ctgtgctgat cacccccggg ttggcttgaa cgcgcgaaga cgttggtaac 1020  
 ctcggtgtca gtggtaccag cttgagcttc cagttgggcg ggtggctggt caccttcacg 1080  
 60 gactttgtca aaccccgccg gggttacctc gggctccagt taacgggctt ggatgcaagt 1140  
 gatcgacgc agcgcgcct catttgggccc aagcggccct gagcggcctt tcgtggcagt 1200  
 tgggtcaacc gcttgggccc ggtcgagagt gtgtgggatt taaagggggg gtgacaagat 1260  
 caagctcagg cggcgcgcga agcagctacc accgcgcgcg caacagggga cgccttaccg 1320  
 gagcacccca atgcccctcg gtaccaaatt agctccaccg acaaggattc gtacaaggct 1380  
 65 tccactcaaa gctccgggtc aaccaattcc cccctacct ccaatttgatt 1440  
 aaacctaaag aagtcgaaaa cagaccccaa ctgcagcagg gcttaaaaac ctgttggacc 1500  
 ccaaccaggt tcgcaccaag ctgcgcaaaa gctttggtac agaccattcc acccaagcca 1560

```

aaccccaatc cctcaaaaaca accacacccgg tgtttgggac gaatagtggg aacattggca 1620
gtgtgcttag tgggtgggggt gctggaggag cagacagcac caattcgggt gacctctccc 1680
ccgttgaacg ggtgagtggtg tggcttgttg ggcaattacc cagtgggggt ggggggaata 1740
gtagtggagga tattaaaagt gtgcaagaca ctccatttta tatctatatt cattagtata 1800
5 ttcttttttaa attgttcctt cactttattc atatgaacca ccgcctccct cgcgacggga 1860
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tacacccgcc ctgacgaggt cgcgctgccc cacaccaatg ccatcaaccc gcgcttaacc 1980
ccgtgaacgt atcgtaacac gagcttttctg tccctccccc tcacgggtga aaaccccggt 2040
gcggtgggct tagtgccgca caacacccgc aagggcacga ctgcgggcag tggcagtcga 2100
10 caaacaccgt atgatccac ccgaaccgaa ggggctttga ccaccgccac cacctttgtg 2160
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<212> Type : DNA

<211> Length : 2214

15 SequenceName : SEQ ID 684

SequenceDescription :

Sequence

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20 <213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
gtgttggtt atattccctg gattgggaat gggcacagat atgggaatga ccaccggggt 60
agcaacagta gtacgagtgg ggtaacaacc cagggaacac aatcgcaaaa tgcattccgga 120
accgaacccg catccacttt ttcgaaatgtc ggcgttggcc tcaaagcgaa tgtccagggtc 180
25 acctggggtg gcagtcagac gacgactacg gggaaaagata ttcttaaattg acccaccctc 240
gaccaagcca acctccagct ctgaacgggg gcggggtggc ggaatgataa ggcttcaagt 300
ggcaaaagtg acgaaaacca caccaagttc acgagcgcta cgggcagtggt gcagcagggtc 360
agttcttcag gtacaactaa ttccgcgggc aatcccgact cgttaaagca ggataagggt 420
gataaaagtg gtgattcggg aacgggttga gaaaccactt caggggacaa cttgacgaat 480
30 tacaccaacc tccctcccaa cctcaccccc accgctgatt gaccgaacgc gctgtcattc 540
accaacaaga acaacgcgca gcgcgcccag ctcttcctcc gcgcctgtt gggcagcatc 600
ccggtgttgg tgaataagag tggccaagat gattccaaca agttccaagc caccgaccaa 660
aaatggtctt acaccgaatt aaagtccgat caaaccaagc tcaacctccc cgcttacggg 720
gaggtgaatg ggttgttgaa tccggcgttg gtggaggtgt acggtctgag ttccactcaa 780
35 ggttctagca ccggagccgg tggcgttggg ggtaacaccg gaggcgacac caataccag 840
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40 caaagggagt taatttgagc cccccgggcc ctgaaccgcc tttcgtggca gttgggtcaa 1140
ccgcttgggc cgcgttgaga gtgtgtggga tttcaagggt gtgtgggcgg atcaagctcg 1200
gtccgactcg caagcagcta caagtaccac caccgcaacg aaggctacct tatcgagca 1260
caccaatgct ttggccttcc aggtgagtta taccgaccag gattcgtaca aggcttccac 1320
tcaaagctcc ggccaaaacc aaaacacctc cccctacctg cacttggtgc aggggaaaaa 1380
45 agtaggttcc tctgataa

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<212> Type : DNA

<211> Length : 1398

SequenceName : SEQ ID 685

SequenceDescription :

50 Sequence

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<213> OrganismName : Mycoplasma pneumoniae
<400> PreSequenceString :
55 ttgttgggca gcatcccggg gttggtgaat cgaagtgggt ccgattccaa caaattccaa 60
gccaccgacc aaaaatgggt ctacaccgac ttacagtcgg accaaaccaa actgaacctc 120
tccgcttacg gtgaggtgaa tgggttgttg aatccggctt tggtagaaac ctattttggg 180
acgacgcgta cgtctagcac tgcgaaccaa aacagtacaa ccgtccccgg tatcggtttt 240
aaaattcccc aacaaaataa tgattccaaa gccaccctga tcacccccgg gttggttga 300
60 acgccccagg acgtcggtaa cctcgttgtc agtggcacca cgggtgagctt ccagctcggc 360
gggtgggtgg tcaccttcac ggactttgtc aaaccccgcg cgggttacct cgggctccag 420
ttaagtggcc tgaatgccag tgacagcgac caaaggaggt taatttgggc cccccggccc 480
tgagcggcct ttcgtggcag ttgggtcaac cgggttggcc gcgtggagag tgtgtgggat 540
ttgaaggggg tgtgggaggga tcaagctcag ttggccgcgc aagcagctac aagtagtacc 600
65 accaccacgg caacagggtg taccttaccg gagcaccoga atgctttggc gtaccaaat 660
agctataccg acaaggattc gtacaaggct tccactcaag gttcgggtca aaccaattcc 720
caaaacaatt cgctctacct ccatttgatt aaacctaaag aagtcgaaag caccgaccaa 780

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```
ctcgaccagg gcttaaaaaa cctgttggac cccaaccagg ttcgcaccaa gctgcgccaa      840
agcttttgta cagaccattc caccagccc cagcccaat cgctcaaac aacgacaccg      900
gtgtttggag ccatgagtgg taacctcgcc agtgtgctta gtggtggggg tgctggaggga      960
gcaggcagca ccaattcggg ggacctctcc cccgttgaac ggggtagtgg gtcactaacc     1020
5  attaatagga atttttctta ttaa                                     1044
   <212> Type : DNA
   <211> Length : 1044
       SequenceName : SEQ ID 686
       SequenceDescription :

10  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
15  atggggccagc agggacaatc aggtacctcc gcggggaatc cagactcgtt aaagcaggat      60
    aagattagta agagtgggga tagtttaacc acgcaggacg gcaatgcgac cggtaacaa      120
    gaggccacta actacaccaa cctccccccc aacctcacc caccgctga ttgaccgaac      180
    gcgctgtcat tcaccaacaa gaacaacgcg catcgcgccc agctcttctc tcgcggcttg      240
    ttgggcagca tccccgggtgt ggtgaatcga agtgggtccg attccaacaa attccaagcc      300
20  accgaccaa aatgggtccta caccgactta cagtcggatc aaaccaagct gaacctcccc      360
    gcttacgggt aggtgaatgg gttgttgaat ccggcgttgg tggaaacctt ttttgggaac      420
    acgcgagcgg gtggttcggg gtccaacacg accagttcac ccggtatcgg ttttaaaatt      480
    cccgaacaaa ataattgatt caaagccacc ctgatcacc cggggttggc ttgaacgccc      540
    caggacgtcg gtaacctcgt tgtcagtggc accagcttga gcttcagct cggcgggtgg      600
25  ctgggtcagct tcacggactt tatcaaaccc cgcgcgggtt atttgggcct ccagttaagt      660
    ggctctggat ccagtgcagc cgaccaaaag gagttaattt gggccaagcg gccctgagcg      720
    gcctttcgtg gcagttgggt caaccggctg gccgcgctgg agagtgtgtg ggatttaaag      780
    cgggtgttgg cggatcaagc tcagttggcc gcgcaagcag ctacaagtga agcttcgggg      840
    tcagcttttg cacctcacc gaatgctttg gcgtttcagg tgagtgtggg ggaagcgagt      900
30  gcttacagct cttcaacctc aagttcgggt tccgggtcaa gttcaaacac ctccccctac      960
    ctccatttga ttaaacctaa gaaagtcgaa agcacgacc aactcgacca gggcttaaaa     1020
    aacctgttgg accccaacca ggttcgcacc aaagcttggc aaagcttggg tacagaccat     1080
    tccaccagc cccaatcgct caaaacaacg acaccgggat ttgggacgag tagtggtaac     1140
    attggcagtg tgcttagtgg tgggggtgct ggagggggtt cttcaggctc aggtcaatct     1200
35  ggtgtggacc tctccccctg tgaacgggtg agtggtcact aa                                     1242
   <212> Type : DNA
   <211> Length : 1242
       SequenceName : SEQ ID 687
       SequenceDescription :

40  Sequence
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    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
45  ttgggcctcc agttaagtgg cctggatgcc agtgacagcg accaaagggg gttaatttgg      60
    gccaaagcgc cctgagcggc atttcgtggc agttgggtca accggttggg acgggtcgag      120
    agtgtgtggg atttgaaggg ggtgtgggcg gatcaagctc acagcgcggt gtccgagtcg      180
    caagcagcta caagtagtac caccaccacc gcaacagggg acacctacc ggagcaccgg      240
    aatgcctcgc cgtaccaa atagctccacc gacaaggatt cgtacaaggc ttccactcaa      300
50  ggctccggtc aaaccaatc ccaaacacc tccccctacc tgcatttgat taaacctaaa      360
    aaagttactg cttccgacaa gttagacgac gatcttaaaa acctgttggg cccaacgag      420
    gtccgggtga agctgcgcca aagctttggg acagaccatt ccaccaacc ccaaccccaa      480
    cccctcaaaa caacgacacc ggtgtttggg acgaatagt gtaacctcgg tagtgtgctt      540
    agtgggtggg gtaccacgca ggactcaagc accaccaatc aactgtcacc cgttcaacgg      600
55  gtgagtgggt ggcttgggg gcagttacca agcacgagtg acggaaacac ctctccacc      660
    aacaacctcg cgcctaatac taatacgggg aatgaggtgg tgggggtggg agatttgtct      720
    aagcgagctt ccattgaatc aagtcgtttg tgaatagcat taaaacctta g              771

   <212> Type : DNA
   <211> Length : 771
       SequenceName : SEQ ID 688
       SequenceDescription :

60  Sequence
    -----
    <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
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ctcgccgggc gcgccttata cgacctcgac ttttcgaagt taaaccacaca aacgccaacg 180
cgtgatgcc aactgccagat cacctttaac ccctttggcg gctttgggtt gagtggcagt 240
5 gcaccccaac agtgaaacga ggtcaaaaaa aaggtccccg tcgaggtggc ccaagacccc 300
accgatcctt atcggtttgc cgttttactc gtgcgcgcga gtgtggtgta ctatgagcag 360
ttgcaaaggg gattagcgct ccctaaccac gggagttcgt caggctccgg tcaacaaaac 420
accaccattg gcgcgtatgg gctgaagggt aagaacgcgc aggcggacac cgcaaagagc 480
aatgaaaaac tccagggcga tgaatccaag tcttccaatg gatottcaag cacttccacc 540
10 accacccaac gtggttcgac caattccgac accaaagtca aggttttaaa aatagagggtg 600
aaaaagaaat cggactcggg ggacaatggt cagctgcagt tagaaaaaaa tgatctcgcc 660
aacgctccca ttaagcgggg cgaggagtcg ggtcagtcgc tccaactcaa ggcggaacgt 720
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15 tcgatcctga ttctgtacga tgcgccttat gcgcgcaatc gtaccgcat tgatcgcggt 900
gatcacttgg atcccaaggt gatgaccgcg aactatccgc ccagttgaag aatgcccgaag 960
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aagtcggccc ccatcgccct cccgtttgaa gcgtacttcg ccaacattgg caacctcacc 1140
20 tggttcgggc aagcgctttt ggtgtttggt ggcaatggcc atgttaccac gtcggcccac 1200
accgcgcctt tgagtatttg gctttatata tatttagtaa aggcagtcac ttttaggttg 1260
cttttagcta actctttatt atcaaaaagc aacatatata aaaaaacagc taattaa 1317
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<212> Type : DNA

25 <211> Length : 1317

SequenceName : SEQ ID 689

SequenceDescription :

Sequence

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<213> OrganismName : Mycoplasma pneumoniae

<400> PreSequenceString :

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gatccacccc gaaccgaggg caccttgacc accgccacca cctttgcgtt acgcccgtat 120
35 gacctcgccg ggcgcgccct atacgacctc gatttttcga agttaaaccc acaaacgccc 180
acgcgcgacc aaaccgggtc gatcaccttt aacccttttg gcggttttgg gctgagtggg 240
gctgcacccc aacagtgaaa cgaggtcaag gataaggtcc ccgtcgaggt ggcccaagac 300
ccctccaatc cttatcggtt tgccgtttta ctcggtccgc gtagcgtggt gtactatgag 360
cagttgcagc gggggttagc gctccctaac caaggaggtt cgtcaggctc cgttcaacaa 420
40 aacaccacca ttggcgcgta tgggctgaag gtgaaaaacg ccgaggcgga caccgcgaag 480
agcaatgaaa aactccaggg ctatgaatcc aagtcctcca atggatcttc aagcattcc 540
accacccaac gtgggggttc gtcaaatgaa aacaaagtca aggcgttgca ggtggcgggtg 600
aaaaagaaat ccgggagtcg gggcaactcc ggtgaccaag gcaccgaaca ggtggaactt 660
gaatctaatt atttagccaa cgccccgatt aaacgaggtt ccaataacaa ccagcaagtc 720
45 caactcaagg cggacgattt tggtagtgc ccttccagtt cgggatacag cacccaagat 780
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agaacgcccc agtgaaacca ccacggtttt tgggactgaa aggcgcgcga tgttttgctc 1020
50 caaaccaccg ggtttcttca cccgcgcgcg caccctcagt ggtttgatgg cgggcagacg 1080
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tttcaaaagg aagctgactc cgacaagtcg gccccgatcg ccctcccggt tgaagcgtac 1200
ttcgccaaca ttggcaacct cacctgggtc gagcaagcgc ttttgggtgt tgggatttgt 1260
1269
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55 <212> Type : DNA

<211> Length : 1269

SequenceName : SEQ ID 690

SequenceDescription :

Sequence

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<213> OrganismName : Mycoplasma pneumoniae

<400> PreSequenceString :

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65 ccggccaac ccaatccact aacagttccc cctacctgca cttggtgaag cctaagaaag 120
ttaccacatc cgacaaggtt agacgacgat cttaaaaacc tgttggaccc caacgaggtt 180
cgcgccagaa tgctcaaact atttgggtaca gaaaatttca cccaaccca accccaaccc 240
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```

caagccctca aaacaacgac accggtatatt gggacgagta gtggtaacct cggtagtggtg 300
cttagtggtg gggggtacca cgcagggtctc aagcaccacc aatcaactgt caccggttca 360
acgggtgagt ggttggaccg ctaa 384
<212> Type : DNA
5 <211> Length : 384
    SequenceName : SEQ ID 691
    SequenceDescription :

Sequence
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10 <213> OrganismName : Mycoplasma pneumoniae
    <400> PreSequenceString :
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15 gacctcgccg ggcgcgcctt atacgacctc gacttttagta ggtaaaccac acagacacca 180
acgcgcgacc aaaccgggca gatcaccttt aacccttttg gccgcttttg tttgagtggg 240
gctgcacccc aacagtgaag cgaggtcaaa aacaagggtcc ccgtcgaggt ggcccaagac 300
ccctccaatc cttatcggtt tgccgtttta ctctgcccgc gtagcgtggt gtactatgag 360
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35  SequenceDescription :

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50  SequenceName : SEQ ID 708
  SequenceDescription :

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65 SequenceDescription :

Sequence
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## Sequence

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## Sequence

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SequenceDescription :

## Sequence

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5 -----
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## Sequence

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## Sequence

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gattatcttt cggcaaaagt ggctctcaag atgatgggtg aaacctaccc ggaatccgac 3180
5 tttgcaatag ctgctttgaa ggaattgttc aggatagaga aaatgtcagg caacgattac 3240
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10 atagatttga acatactttc ctgtgaacaa aggaaatcgc tcgaaagcca tcaaaatgta 3540
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gctgttgtaa caagccttga ctataccgat acccttccct gttctgtaat aaaaatatat 3720
ggaataaatg gagcctcgcc tgatataacc ggggtgcccc aacatctatc cgaagggttat 3780
15 tacagcatat agttcaatag atccaacttt gatcccggtt tctacctggt aacgctaaat 3840
gttgatcaga aaattataga tacggaaaaa ttacgaatca aataa 3885

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&lt;212&gt; Type : DNA

&lt;211&gt; Length : 3885

SequenceName : SEQ ID 719

20 SequenceDescription :

Sequence

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<213> OrganismName : Shigella flexneri 2a str. 2457T
25 <400> PreSequenceString :
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acgagtggaa acctgaatac tgacaccata ataagagtca actctgacgg ttcgggtacc 120
ccctcttttt ctgacggaga tgatacattt attgttactg cgggtaatac cgcagtcggc 180
gttcttgcgt gtgcatctcc cggaaagcgc tgtgcgtgtg tatcttctct tgatgaagaa 240
30 agtactgccg atacaggaag taatgaaaat aatgccatag caaaactgga tatggcaaaa 300
ggggagatca caaccacagg aacagaaaagt tatgcgcggt acgctaattg cactgtcgtc 360
aaggctgggt acacgcttga ttataccaat gccagcggtt cattaaccga tgttgatata 420
accacgcatg gggacaatgc tcatgccatc cgtgcgccgc aggggacagt ttcatttaac 480
caggagaaaa tttatacaac gggctcctgac gccgcgattg ctaaaattta taatggcggc 540
35 acggtgacgc tgaanaatac atctgcagtc gcgcacaggg ggtctggaat tgtgctggag 600
tcttccataa atggctcagga agcaacggta gatattttat ctggtagctc actacggtca 660
gcaaatgaaa tcctctacca taaagatgag acgagtaacg tgaccattac ggatagtgag 720
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actaattcaa aaataacggg ttcagctaata attcaacag atgataacac tcatacctat 840
40 ctgtcgcctt cagataatag tacctgggat attaaagctg actcaacggg gagcaacctc 900
acgggttgata atgacacggg ctatatttcc cgtgcagatg gacgggatgt cgaaccaaca 960
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45 attatcagcg ttgaggggga atcaaatggg gaatttatta aggattcgag gattttcgcc 1200
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50 gatcctgtaa ctgaacagga gcgttcaagc cgactttggc tacgtcaaat tggcgggcat 1500
aatgcctggc gtgacagcaa cggacagtgt agaacgacct cgcacgccta cgtctcgag 1560
ttagggggcg atctgttaac cgggtggttt accgatagtg acagttggcg tttgggagtg 1620
atggctgggt atgcccgcga ctacaactta actcattcca cgtgtcggga ttatcgttcg 1680
aaagggagtg tcagaggcta tagcgcaggg ctgtatgcca cttgggtttgc cgatgacatc 1740
55 agtaaaaaag gcgcatacat tgactcctgg gcgcaatata gctgggttta aaactccgtg 1800
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gcgggttacg gttttgccct gaataaatcc tttggtctgg aagcggcgaa atatacgtgg 1920
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gccaatggct cacgtattga gaatgacgca aataacaaca tccagaccog actcggcttc 2040
60 cgcaccttta ttcgtactca ggagaaaaac agcgggtccg acggtgacga ctttgaacct 2100
tttgttgaaa tgaactggat ccataaacgt aagatttttg ctgtctcaat gaacgggtg 2160
aaagtgaac aagatggggg gagtaatttg ggggaaatta aacttggcgt aaatggcaac 2220
ctgaatccag cggccagcgt ctgggggaaat gtgggcgtgc agctgggtga taatggctac 2280
aatgacaccg cagtgatggg gggcctgaaa tataagttct ga 2322

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65 &lt;212&gt; Type : DNA

&lt;211&gt; Length : 2322

SequenceName : SEQ ID 720

## SequenceDescription :

## Sequence

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5 <213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
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cacgctgaag gtaaaatttct cctgggcgca ggcgtaggtg tcgttgagca cccatataaa 120  
gattacgata ccgatgttta ccagtagccg gtaatcaact atgaaggcga taacttcttg 180  
10 ttccgtggct taggtgggtg ttactacctg tggaaatgac caacggataa actttcaatt 240  
accgcttact ggtcgccgct ttacttcaaa gcgaaagaca gtggcgatca ccaaatgcgt 300  
cacctggatg accgtaagag caccatgatg gctggctctgt cttatgctca ctttaccag 360  
tacggttacc tgcgtaccac cctggctggc gataccctgg ataacagcaa cggcattgtc 420  
tgggatatgg cctgggttga tcgttacacc aacgggtggc tgaccgtgac tccgggtatt 480  
15 ggtgtgcagt ggaacagcga aaaccagaac gaatactatt atggcgatc gcgcaaaagag 540  
tccgctcgca gcggtctgcy tggctataac ccgaatgaca gctggagccc ttaccttgag 600  
ctgagcgcca gctacaactt cctcgccgac tggagtgttt acggtagccg gcgctacacc 660  
cgtctgtctg atgaagttac tgacagcccg atgggtggata aatcctggac tggcctgatt 720  
tctaccggga tcacctacaa attctga 747  
20 <212> Type : DNA  
<211> Length : 747  
SequenceName : SEQ ID 721  
SequenceDescription :

## 25 Sequence

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<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
atgaaaaaaa ttgcgctagc aggtctggcc ggaatgctgt tggtttctgc atcgggtcaat 60  
30 gcaatgagca tcagcggcca ggcgggtaaa gaatacacca atattggtgt cggttttggg 120  
actgaatcga cgggcctggc tttaagcggc aactggacac ataacgacga cgacggtgac 180  
gtcgcgggcy tggggctggg gttgaatctg cctctcgggc cgttaatggc gaccgttggc 240  
ggaaaaggcy tgtacaccaa ccgaattac ggcgatgaag gttatgccg agcggtagga 300  
ggtggtttgc agtggaaaat tggcaacagc ttccgtttgt ttggcgagta ttactactct 360  
35 ccggttcgc tctccagcgg tattcaaagt tatgaggaag cgaatgctgg cgcgcgttac 420  
accattatgc gtccagtcag tattgaggcg ggttatcgct acctgaatct gtcgggtaaa 480  
gacggtaacc gcgacaacgc tgtggctgac ggctgtatg ttgggggttaa cgccagtttc 540  
tga 543  
40 <212> Type : DNA  
<211> Length : 543  
SequenceName : SEQ ID 722  
SequenceDescription :

## Sequence

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45 <213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
atgactacct tgaccgccag ggtgttttaca acggcagaga taatttatcg gaaaacagtt 60  
atcgcatggg tgtgtcattt aaactgtagt agacaggaga cagtccacaat gaataaaaact 120  
50 ataattggcg ttgctatcat gatggcttca tttgccgcaa acgctctgt attaccggaa 180  
actcctgtgc catttaaaag tggtagccga gcaattgata acgacactgt ctacattggt 240  
ttaggttagc caggtagacg atgggtacaag ctagatacac aggccaaaga taaaaaatgg 300  
actgcgttag ctgcattccc tggtaggacc agagagcaag caacctctgc atttattgat 360  
ggcaatctgt atgtgtttgg cggcattggc aaaaacagcg agggattgac tcaggatttt 420  
55 aatgacgtac acaaatataa ccccaaaacc aatagctggg ttaaattgat gtcgcacgcg 480  
ccgatgggca tggcgggtca tgtgactttt gtacacaacg gcaaggctta tgttactggc 540  
ggtgttaacc agaatatctt caatggctat tttgaagatc tcaacgaggg tggaaaagat 600  
tcaaccgcta tagataaaat caacgcccac tattttgaca aaaaagcaga agattatttc 660  
ttcaataagt ttctgttgct ttttgatccc tcaacacagc aatggagtta cgctggcgaa 720  
60 tcgccttggt acggaacggc tggtagcggc gttgtgaata aaggtgataa aacctggctt 780  
attaatggcy aagccaaacc aggattgcga acggatgccg tatttgaact tgatttcacc 840  
ggtaataatt taaaatggaa taagcttgat cccgtctcat caccagatgg cgtcgctggc 900  
ggttttgccg ggataagcaa tgattctctt atatttgctg gaggggcccg attcaaaggt 960  
tcacgagaaa attacagaa cggtagaac tatgctgatg aaggcctgaa aaaatcatat 1020  
65 agcaactgata ttacttttg gcataacggg aaatgggata aatcgggtga attatcgcaa 1080  
ggtcgggcct acggagtatc attgccctgg aataatagtt tattaattat tggcggtgaa 1140  
actgcaggcg gcaaacgggt gacggattca gttttaattt ctgtgaagga taataaagtc 1200

acagtacaaa actaa 1215  
 <212> Type : DNA  
 <211> Length : 1215  
 SequenceName : SEQ ID 723  
 SequenceDescription :

5 Sequence  
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 <213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :  
 10 atggcaactg gcggcgctgc cctggcaggt aaagcgggta tgggtgccgc agccgggtgca 60  
 gccggagggtg caagtgcact ccaagcgggt tttcagaaaag catcagcgag tatggaaacc 120  
 ggcgggtgaca tgtccagcat ggggtcagtt gtcagcagtg gcggaacggt tgggtggtgaa 180  
 ggcgggtactg ctggcagtag ccatttcgccc caagcggctg gctttgggtga cagcggcaggt 240  
 15 agctcaagcg gtggcggctt tgccaaggcc gcgaagctgg ccacaggcac ggcctccgag 300  
 ttagccaagg gtgtcggctc tcaagtgaag cagggattcc aggagcgagt gagcgaaacc 360  
 acagggcgaa aactggctgc ttcgatacgc gaaagcatgg agccgaaaga agcaagccaa 420  
 tctggccagt tcgagggcaa tagcttgggc gccgattctg gcccgatag taacgaagtc 480  
 aggagttag 489  
 20 <212> Type : DNA  
 <211> Length : 489  
 SequenceName : SEQ ID 724  
 SequenceDescription :

25 Sequence  
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 <213> OrganismName : Shigella flexneri 2a str. 2457T  
 <400> PreSequenceString :  
 30 atgaagcgag ttcttattcc tggcgtcatt ttatgtggcg ctgatgtggc gcaggccgtc 60  
 gatgacaaaa acatgtacat gtattttttt gaagagatga cggctctatgc tcctgtccct 120  
 gtacccgtaa acggcaacac gcattacacc agtgaaagca tcgagcggtt accgaccggg 180  
 aatggcaata tcagcgatct gctgagaacc aaccctgcgg tacgcatgga ttcaacgcaa 240  
 agttacctgt tgaaccagg agatattcgc cctgagaaaa tctctattca cgggtgcgtcg 300  
 ccctaccaga atgcctattt gattgacggt attagtcaa ctaataacct gaaccagcg 360  
 35 aatgagtcag atgccagtag tgcaaccaat attagcggga tgtcacagggt gtattatctt 420  
 gatgtcagct tactggacaa tgtgacgctt tatgacagtt ttgtgccgggt tgaatttgggt 480  
 cgcttcaatg tgggggtaat tgaatgcaa agatgcaaaag atcaaacgct tcaacgctga tgatagcaag 540  
 gtgaaatttg gttatcgac tacgcgtttg gactgggtta catcgcatat cgatgagaat 600  
 aacaagagcg catttaatac aggttcttca ggaagtacct atttctctcc agatttttaa 660  
 40 aagaactttt ataccttgct gtttaatcag gagctggctg ataactttgg cgttaccgcc 720  
 gggttctgac gccgcagtc tgatatcacc cgcgcggatt atgtttcgaa tgacggcatt 780  
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 tttgccagcg accgctttac ccacgattta accttaaaat ataccggctc cagccgtgat 900  
 tataatacca gcaccttccc gcagtctgat gcggaatgg gtaataaatc ctatgggtctg 960  
 45 gcatgttgata tggatacga actgcgatg gccaaactac gtaccacgtg tgggtgggat 1020  
 catattagtg attatacccg tcacgatcat gacatctggt acaccgaact ttcatgtaca 1080  
 tatgggtgata ttacaggcggt ttgtacccgt ggccgattag gacacatttc ccaggctgta 1140  
 gataattaca ccttcaaaac acgcctggac tggcaaaaat tcgccgtggg tgatgtttcg 1200  
 catcaacctt acttcggcgc ggaataacatc tattccgatg catggactga acgcataac 1260  
 50 cagtctgaat cctatgtgat taatgctgca ggaagaaaa ctaaccatac catttaccat 1320  
 aaaggtaaaag gcagcctggg aattgacaac tacacgctgt atatggcgga tcacattagc 1380  
 tggcggaatg tgtcgttaat gcccggtgtg cgttatgact atgacaacta tctgtcaaac 1440  
 cacaatatct ccccgcgctt tatgacggaa tgggatattt ttgctgatca aacctcaatg 1500  
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 55 atccgcaata gctggacgga atcggtatca ggtaataaaa cctgacgagc ttatcagaat 1620  
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 gttattggcac ccgcaagtga agcgcatgat caaatcagca aaagcagtcg taccgacagc 1740  
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 60 attgtcttta gctatatcaa gagcaagggc aacttgtcgt taaacaatgg ttatgaggag 1920  
 agcaataccg gtgataacca ggtggtttat aacggtaatc tggctcttta cgatagcgtt 1980  
 ccagtggcag attttaataa cccattaaag atctccttaa acatggattt cacgcatcaa 2040  
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 atccttggtg agacaaatgc gcaatacatc agcgaatatt cagattacaa gcagtatgtt 2160  
 65 gacgaaaaac tggatagcag cctgacctgg gacacccgct tgcctggac gccacaattt 2220  
 ctgaaaacaac aaaacctgac gatcagtgcc gatattctca atgtactgga tagcaaaacc 2280  
 gctgttgata caacgaacac cgggtgtggcg acctacgcca gtggccgtac tttctggctt 2340

gatgtcagca tgaaatttta a 2361  
<212> Type : DNA  
<211> Length : 2361  
SequenceName : SEQ ID 725  
SequenceDescription :  
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<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
10 atgaagaaaa cattgttagc aatcatgctg gcggggacag cttttgcttc tcaggcggga 60  
acttttagtaa gccagggtac tgaagcgtca gctaacttta ctttgaccaa gcctatcggt 120  
gttaataata ccattcaacc agtgaaagggt gtatatagcg gtacgttaac tgcattggacg 180  
cctttggcaa caggtattgt tggcgcactc gatgggcaga gccacgacta tgctgtaact 240  
15 ttcccggatg atatttatgc ggagagcagt acttcagcgg atgcagtaat ttctgggtgac 300  
aataaccogg accataaact gaaagtttcc ctgacaacgc ttgagcagga tcctccttca 360  
gctgcctccg aagagattgg cggtaagcgt tatatgatgc tgaaaaatac tggaaacaggt 420  
gggtgcctatc gcgtcgtttc ccatatgaaa gaacagggtt ttgagccaga ctcttacacc 480  
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<212> Type : DNA  
<211> Length : 513  
SequenceName : SEQ ID 726  
SequenceDescription :  
Sequence  
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<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
30 atgggtattht accactgggtc ccggaagaca aaaatgaaac ggacaaaatc catacgccac 60  
gcatcgttcc gcaaaaaactg gagcgacgc catctgacac cagtcgctct cgcgggttgcc 120  
actgttttta tgctggctgg ctgtgaaaag agtgatgaaa cagtgtctct ctatcaaaat 180  
gctgacgact gttcagctgc aaacccaggc aaaagcggcg aatgtaccac cgcgtacaac 240  
aatgcgctga aagaagccga acgtactgcg ccgaaatacg ccaccgtga agactgtgtt 300  
gctgaatttg gtgaaggta gtgtcagcaa gcaccagccc aggtggcat ggcaccagaa 360  
35 aaccaggcgc aggtcagca atccagcggg agtttctgga tgccgtgat ggcgggttac 420  
atgatggggc gtctgatggg cggcggcggc ggatttgac agcagccgct gttctcctcg 480  
aaaaaccogg ccagtcgggc ttacggtaaa tataccgacg cgacgggtaa aaactatggc 540  
gcagcccagc caggccgcac catgaccgta ccgaagacgg caatggcacc aaaaccggcg 600  
accaccacta ccgttaccgg tggcggtttt ggtgaatctg ttgcaaaaca aagcactatg 660  
40 cagcgtagcg caaccggcac ctcttctcgt tcaatgggtg gctga 705  
<212> Type : DNA  
<211> Length : 705  
SequenceName : SEQ ID 727  
SequenceDescription :  
Sequence  
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<213> OrganismName : Shigella flexneri 2a str. 2457T  
<400> PreSequenceString :  
50 atgacaaaaa tgagtcgcta cgccttgatt accgcgctgg cgatgtttct cgcggggtgt 60  
gtggggcaac gtgaacctgc accggtagaa gaagtgaaac cagcgccgga acaaccagcc 120  
gagccacaac agcctgtccc cacagtggcc tcggtgcca cgatcccga gcagccaggc 180  
ccaattgagc acgaagatcg aacggcaccg cctgcgccgc atattcgcca ttatgactgg 240  
aatggcgcaa tgacgccgat ggtcagtaag atgcttgggg ctgacggggg gactgcgggt 300  
55 agcgtcctgc tggttgatag cgtaacaac cgtactaacg gtccgtgaa tgccgcagaa 360  
gcgaccgaaa cgctgcgaaa tgccgtggct aataacggga aatttaccct ggtttccgcc 420  
cagcaactgt cgatggctaa gcaacagtta ggtttgcgc cgcaggacag tttaggcacc 480  
cgtagtaaa ccataggcat tgcccgaat gtcggcgctc attacgtgct gtactcctgc 540  
gcctctggca acgttaacgc tccgacccta caaatgcagc tgatgctggg gcagacgggc 600  
60 gaaattatct ggtcaggtaa aggtgccggt tcgcagcaat aa 642  
<212> Type : DNA  
<211> Length : 642  
SequenceName : SEQ ID 728  
SequenceDescription :  
Sequence  
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<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
5  atgacgaaac ttatgcaatt tgttcagagg tgctattata tgactaataa gaaaatgtat      60
   tttatattaa tacttgtttt cacattgcta cagggtgtgtt tttttgctct ctggaaggct      120
   cgtgatggta gcacaacgtc tcttgaatgt acgtcgacgt taacaagaaa tgctaaaaca      180
   gatcattctt tatactactc tgctaaccct tcagtcattt taaaaaaga tggtagcgggt      240
   agttttacga ttgttggctt aactgatgaa gatacaccga ggaaattttc ccattcgtat      300
   ttttttacct acaaaataga tagtaacgga cggatctcag gtaatgctaa ggccaaagt      360
   tcggggactgg aaaatcagat aaaggatgag aacttcagac tcaattttct cgatgcatct      420
10  ttaacaggta aaggcaatgc gaggctaagc aagtttaata atgtctatat ttttagtatc      480
   ccgggggttga tcattaacac atgtgctcca atataa      516
<212> Type : DNA
<211> Length : 516
   SequenceName : SEQ ID 729
15  SequenceDescription :

Sequence
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<213> OrganismName : Shigella flexneri 2a str. 2457T
<400> PreSequenceString :
20  atgggcagga taagctcggg aggaatgatg ttttaaggcaa taacgacagt cgcgcgactg      60
   gtcatcgcca ccagtgcaat ggcgcaggat gatttaacca ttagcagcct tgcaaagggc      120
   gaaaccacca aagctgcgtt taatcagatg gtgcaagggc ataagctacc tgcatgggtg      180
   atgaaaggcg gtacttatac tccgcacaaa accgtaacgt tgggagatga gacgtatcag      240
25  gtgatgagcg cgtgcaaac gcctgactgt ggctcgcaac gtatcgctgt gatgtggtcc      300
   gagaaatcta atcagatgac ggggctgttc tcggctattg atgagaaaac gtcgcaagag      360
   aaactcacct ggctgaatgt gaacgatgag ctttcgattg atggtaaaaa ggtgctgttc      420
   gcggcggtga cgggcagcct ggaaaacat ccggatggct ttaattttaa ataa      474

30  <212> Type : DNA
   <211> Length : 474
       SequenceName : SEQ ID 730
       SequenceDescription :

35  Sequence
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<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
40  atgaaaaaac aatttttggg aaaagctgtg tttactgttg cggctacggc agcaacagtt      60
   gtttttaggaa ataaaatggc tgatgcagac acttatactc ttcaagaagg agattctttt      120
   ttcagtgttg ctcaacgata tcatatggat gcttatgagt tagcttctat gaatggaaaa      180
   gatattacca gtctgatatt gccgggtcag actttaactg ttaatgggtc ggcagcaccg      240
   gataatcagg cggcagcgcc aactgacact acgcaagcaa cactgaaac gaatgatgag      300
   aatgcccaata cttatcctgt tggccaatgt acttgggggg ttaaagctgt tgcaacttgg      360
45  gcaggcgact ggtggggcaa tggcgggtgat tgggcctcta gtgcttctgc acaaggttac      420
   actgtcggta aactccggc agtaggggtct attatgtgtt ggacagatgg tggttatgga      480
   catgttgctt atgtcacagc tgttggtgaa gatggtaaag ttcaagtact ggaatccaat      540
   tataaagatc aacaatgggt tgataactat cgtggttggg ttgatccaaa taatagtgga      600
   acaccaggca gtgtcagtta tatttatcct aactaa      636
50  <212> Type : DNA
   <211> Length : 636
       SequenceName : SEQ ID 731
       SequenceDescription :

55  Sequence
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<213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
60  atgtctatta aaaatatttt agaaaacaaa acaacaacaa ttaaagttag ttttgcagga      60
   attgcaacag cagctagttt aattttacct atggcagtag aggcagaaac tacttatact      120
   gtgaaatcag gagatacttt atcagagatt gcttcaacac acggaacaac tgttgataaa      180
   cttgctaagt taaataaaat taataatata catcttatcc atgtggttca aatttttagaa      240
   ttagatgcag caacagaaga tactgatgca acgccagtag aagaaagtca gataaatgaa      300
   gcagaaacct cagcatctgc caaaactagt caaacgagcg aagtgcagac aacagcaccg      360
65  gtacaagaaa gccaaacaag tgaagttata acttcagcac cagctgaaac cagtcagaca      420
   agcgaagtgc caactgaagc caaccaaaac aatgaagtaa gttcagcagt atcggttgaa      480
   accagtcaaa cgagtgaggc gacgacttca gctccagtgg aaactagtca gacaagcgaa      540

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gcaacgacag cggaaccaac tgagaccaag accagccaaa caaatgaagt agcagcttca    600
gctgaagaaa accaaacaac atctaatact agcgggtttga gcacatctga tgcagctgca    660
aaagaattca tcgctcaaaa agaatcaggt ggtaattata atgctaaaaa tgggtcaatat    720
tatggacggt atcaattgag tgattcttac ttgaatgggtg atttgtcaga agaaaatcaa    780
5 gaacgtgtag cagatgctta tgtatcaagt cgttatgggt catggactgc tgcacaagct    840
ttctggaatg ctaatgggtg gtatttaa                                867
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<211> Length : 867
      SequenceName : SEQ ID 732
10      SequenceDescription :

Sequence
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15 <400> PreSequenceString :
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acaggtggag ctactgatgg tgaaattata gctaactcga tgttacaagg taaagctact    120
aagggcgaaa ttactatgta tacttggaac attattcaaa atggctgggt gaattcactc    180
gtgtcttggg gtattgggtg ttataaatgt tctataggat actcagctca aggtaataga    240
20 ggatttagta attatccata cgatgtttct atggattcag ataatagcag tagttcaagt    300
aatacgacag gtggttatgt taattataac cagagtttta attctggatg gtaa        354

<212> Type : DNA
<211> Length : 354
25      SequenceName : SEQ ID 733
      SequenceDescription :

Sequence
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30 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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actacctcaa ccttacctag tataagtatt ctagctgagg acagtactgg agcacctgct    120
aggccagatg gacaagctcc tgctggaggt ggtgctaaca ccacaactta tgattacagc    180
35 ggaatcaaca gtggtgttct agttgctaag ggtagcaagg tcaacttcag ttccaaaacc    240
aaatcaacta cttccgcccc aaatacagct cttgttcaaa acggtggtag tttaacactg    300
cataaagcga atttaataaa atccgggtgat gataacaatg gtgacaatga taatttttac    360
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40 tacgctaata aaacaagcat tgcgactaca gctgataatt cacggggact tgatgccact    540
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45 aattctaatt taattagtag catgacaaac aaaactgcca gtgacccgat tgccaatggc    840
gttatcatct atcagtcaca atccgggtgat gccgaagcaa caacggggca aagtgccac    900
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50 ggggcaacag ttaactttac tggccataag cagacactta aaggggatgt tgatgtggat    1140
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55 aaacttgtaa aaggtaaaag caaatatagc ctaacagtca caggaactta cagtcaaaag    1440
gtaacaacca gctcaagtaa caaaccagc agcagttaca ttaaccgtag tgacttcgat    1500
aattatttta aaacaacaac agcctttgta aataatacca aaaatacaag taattaa    1557

<212> Type : DNA
60 <211> Length : 1557
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      SequenceDescription :

Sequence
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65 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :

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cttaaatat taccagaagg caaaacaaat gagtatttag aaaaatatgc tcatgctgtt      180
ggcttagatc cggtttctat tattcatggt tatcgcaatc aggaaatgag cgatgaactt      240
5 atcctacctt cttctgcaga attggctgct tcttcagata gcaatataga aaagaaaaat      300
gaaggaaaat caattgaaga acctcaagag ttagctattg atagtttgga tgttactcaa      360
aatattacag aagagactcc ccaaatagaa gattttaagg ttgaatcaga ggaggcaagt      420
aaaaaaatag aaaaaatacc atctcgactt agtaaatatg attatgatga agaaccgaa      480
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10 gttggatatg tggtttataa tcagctgcaa actgattcaa ataagactga attaagtacc      600
tctacgaaaa aatctaagga tactaaaaat gatgccaatt caacgcacaca aagtcagacc      660
agcataacaa cagactttgc tgatgggtga aataatatca ccttaagtaa tactaatgga      720
aaagttagagg ttacttttac tttgacaggg gatgaggaaa gttgggtttc agcaactaac      780
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15 ttagcagaag gttaacaac atctatgctg acagtcggat cacctagcgg tgttgaaatt      900
acgatcaatg gtcaaaagggt ggatactaca aaccttggtta atgctgggtt gactaatatt      960
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<212> Type : DNA
<211> Length : 978
20 SequenceName : SEQ ID 735
SequenceDescription :

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## Sequence

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25 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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gctaagagtc tccatcttga aaaaatcaat aaatcgataa ctatttcgct tccttttgggt      180
30 aaaaaaaga tggaacaaac agcacgttac tattcagggtg aacagggttca gatcagttcc      240
tcagctaaaa aagacagtct tggaaaagggt ctgtctcatt accaaaattg gattgggaca      300
gttaaaaaaga taaaatcaca aaaagacagt cgtcaaaagc atcattatag ttatgaagtt      360
acatttgata atggcaaagc tttgaaatat gttcaggaaa aagacttagt taaaacaaaa      420
agatctaaat acagcaaagg tcaaattgtc aaattaaaat cctctgcgac agctgattta      480
35 gatggcagca gtttaacgga ttatcgtgca tcagctggta aaatcgatca tatttcttat      540
aatcatagca ataccacagg tggctataag tatgatatca cctttgatga aggcggcaag      600
gtgactaata ttcaagaaaa agatttggat aaggtttatg aagttcagct aaaatcagaa      660
aatactgcag ctcaaaataa tgagattcct aaacaagctt ttgcatatgc taaacaacat      720
tctggtacta tcttaagttt gccaaacggt gaatttaaga ttggcagtc gacaccagac      780
40 aaggattata tcaatttaac atctgatact gaaattcgtg gagataatac gacacttttg      840
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tttatgatta tggctgatca tgggtgataat tggaaaattt gtaacaatag ttttaccatg      1020
45 gtgcataaaa aaggaagcca catttttgac ttaggttcct tgcaaaattc agcttttgaa      1080
ggaaatcaat ttaactggcta tggccttgaa ttaactatg tcagtaagat tgatgataat      1140
gcagatcttc atgattttta ttcagaagtt atccagctgg atgccgctga gtctagcggg      1200
gtttgggatg gtgggttgat aaaggctatt gatccaaatt atgaaaatta taataaagag      1260
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50 gtcaaaattt atgataatgt ttttagtaac tctttggtca gccgtttcaa tcaaaatggc      1440
aaaagcgagg cgtggatttt taaagctatt cacctaaaaat caaattataa taatgctggt      1500
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<212> Type : DNA
<211> Length : 1521
55 SequenceName : SEQ ID 736
SequenceDescription :

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## Sequence

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60 <213> OrganismName : Streptococcus mutans UA159
<400> PreSequenceString :
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gctggaactt ttgatgtcaa cgctgtacag gcagccaacg gaaaaactat tcaatcgata      180
65 gatgttcgca tttggtctga agaaaatggg caggatgatt tgaaatggta tcatgccagt      240
aatgatggca gcaatcaatt gacagttcat tttaatgctg agaatcatgg cagtaaggta      300
ggttcttata ttgcgcatgc ttatattacc tatacagatg gtaatcgagt cgggggttaat      360

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      ttgggaaaaac gaaaattatc cttatctgca cgcgaattat ccttaaaaaca aggtggcctt 420
      caactatttt ctaagctgaa acctagtgcg gcggatcaac ttttttcagc agtttggtcg 480
      gatgagaatg gtcaagatga tcttcattgg tacacggcag atgctgacgg gaatactttg 540
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5      aatggtaaga tgataccaat tagtgctcaa gatattgata ttctaaaacc gaaagtcaag 660
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10     aaactggatg gtttaggaga aactcatttt aatgttcctg ctattattaa ctatgaagat 960
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      caagctaate tttattggta tgaagctaaa cagctagcaa atggaaaagg tgcaattact 1140
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15     tataatgatg gcacgactag cggacatgtt ttggctaate agcagctcaa tcaaattgtc 1260
      cattatcaac cttctgcagt aagaataaca gctatatga atgaaaaaaa tacttatcca 1320
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20     cacgttgaga gtaataaccg tattcaagtg aaagaagcta attataagaa tcaacaatat 1560
      atttccaatt ttgcgggatg gtttgatccc acgacttctt atttgggaag attaacttat 1620
      atttatcctg actaa 1635
      <212> Type : DNA
      <211> Length : 1635
25     SequenceName : SEQ ID 737
      SequenceDescription :

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30     <213> OrganismName : Streptococcus mutans UA159
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35     tcacacaatg ataaaaaaga ttccacatct aaaaccacta tcatcaaaaga aaaagaagtg 240
      gatgactcaa atagtaacaa caatgctgct aattctcaag ctgaaaatga cagcaataac 300
      aataataatt ctgcagaatc aaatcaaaac caaactgcaa caacagcaaa tgacagtaac 360
      agcaattcgg ctaatcaaaa tcaagccaat agccaatcac aagcaataa tcagcaaaat 420
      caaaacaatg ctaatgctgg tcaataa 447
40     <212> Type : DNA
      <211> Length : 447
      SequenceName : SEQ ID 738
      SequenceDescription :

      Sequence
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45     <213> OrganismName : Streptococcus mutans UA159
      <400> PreSequenceString :
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50     gacacaacag ctttttagcg ttttggaaac attcgaaaca acacagctct aaaacagagc 120
      actaactgcg ctagctggtt caatcgtttt ggaaccattc gaaacaacac agctctaaaa 180
      ctacacatat taattaatgg cgtttccttt tgttttggaa ccattcgaaa caacacagct 240
      ctaaaacctc gtggaccaat tttgtctcg acatttcgta atcgcgccat tcatctcagc 300
      cagatttcag cttcaaatg a 321
55     <212> Type : DNA
      <211> Length : 321
      SequenceName : SEQ ID 739
      SequenceDescription :

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60     <213> OrganismName : Streptococcus mutans UA159
      <400> PreSequenceString :
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65     ataggatgct caatgcagaa aaaaaccaaa tcagaaagca gctcgacttc tcaaaagact 120
      actttacaaa caaaacagtc aagtgaaaaa tcaactgatg ctaagcaaac gacagaagct 180
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gatacaggcg ctgtttttaa ggctgattac agtagtatgg cagggaacttg gaaaaatgaa 300  
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aatctaactc tttatattgt gccagccaat aaaaccttat ctaatacaata tttttctaata 480  
5 ggtcaaaagcg atgaatccga taaaacaaaa gatcgtattg tttcttctga gagttaaata 540  
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<211> Length : 588  
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10 SequenceDescription :  
  
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<213> OrganismName : Streptococcus mutans UA159  
15 <400> PreSequenceString :  
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25 gggcaattaa cacctatcat gtttacagg tctgtagatg gtgaaattga ttattcacat 600  
cccaatccct atccagtatc attaaacaag cagtaa 636  
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<211> Length : 636  
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30 SequenceDescription :  
  
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<213> OrganismName : Streptococcus mutans UA159  
35 <400> PreSequenceString :  
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attgttaaaa cggattctaa taaaaccgat gaaaaagtcg ctttcaaaaa aggtgctact 180  
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40 attgatgggtg tcactcagga taaaaagca ggtaggtact ggatgtttga tgtaaatgat 300  
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<211> Length : 390  
45 SequenceName : SEQ ID 742  
SequenceDescription :  
  
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50 <213> OrganismName : Streptococcus mutans UA159  
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55 agcaatgaaa aagcagccac ttcgggtttc tatagttctt ccaaaccggt caaaaaagcc 240  
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gaaacgacaa gttcctcttc agacagtgat ggcgagacaa ttacagttca aggaggtgaa 360  
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60 taa 483  
<212> Type : DNA  
<211> Length : 483  
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65 SequenceDescription :  
  
Sequence  
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<213> OrganismName : Streptococcus mutans UA159  
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10 ctttttggtta tgacaacaga aggtcaaggt accttgcctt ctaatagttt tggttctatc 480  
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15  
<212> Type : DNA  
<211> Length : 714  
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SequenceDescription :  
20  
Sequence  
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<211> Length : 687  
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40  
Sequence  
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<211> Length : 1353

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        SequenceDescription :

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30 ctaactacta aagataccac tctaaaagcc atcaatattc aatcattaca ccctggcggg 720
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35 ctgacaccag ctaagattgg taaggaatca acttcagatg ttatttctta tgtggctgag 1020
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        SequenceDescription :

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50 attactaaag aagaaagcaa agaaaaagca aagagcattg cttcggagcc tattccaca 240
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    <211> Length : 615
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        SequenceDescription :

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40 &lt;211&gt; Length : 2274

SequenceName : SEQ ID 757

SequenceDescription :

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&lt;213&gt; OrganismName : Streptococcus pyogenes strain MGAS8232

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&lt;211&gt; Length : 1785

SequenceName : SEQ ID 758

SequenceDescription :

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Sequence

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10 SequenceName : SEQ ID 759
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SequenceDescription :

30 Sequence
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40 cagcaattag ttcaatataa tacaacaaca gctcagtcag cttatgatac tgctgttagg 360
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SequenceName : SEQ ID 761
SequenceDescription :

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10 atcgggcttg cggccaccaa cttgggattg accgtaaagg tctcgacaa gatagagaac 720
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20 <212> Type : DNA
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       SequenceDescription :

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## 25 Sequence

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35 gggtcaaaact attacttttc tgttcccatc acggtaaacc ccacgtacac gtttgccgta 420
   gggcgctggc gcataccgct ctccctgggc gttgggctca acattcagtc ctatctcagc 480
   aagaaggcgc cggggccttat tgcggaagcc agcgcggggc tctactacca gtacaccccg 540
   gactggtcca tcggcgccat tgttgccctac acgcagcttg gggacattgc aagctcccc 600
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   <212> Type : DNA
   <211> Length : 660
       SequenceName : SEQ ID 763
       SequenceDescription :

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45

(19) World Intellectual Property Organization  
International Bureau



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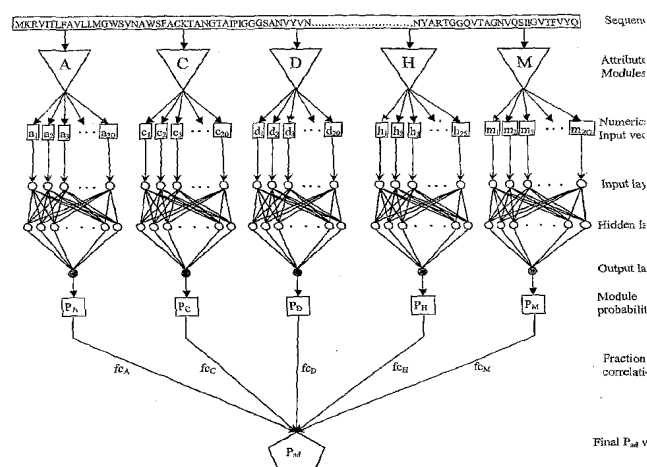
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

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[Continued on next page]

(54) Title: COMPUTATIONAL METHOD FOR IDENTIFYING ADHESIN AND ADHESIN-LIKE PROTEINS OF THERAPEUTIC POTENTIAL

The Neural Network architecture



(57) Abstract: A computational method for identifying adhesin and adhesin-like proteins, said method comprising steps of computing the sequence-based attributes of a neural network software wherein the attributes are (i) amino acid frequencies, (ii) multiplet frequency, (iii) dipeptide frequencies, (iv) charge composition, and (v) hydrophobic composition, training the artificial neural Network (ANN) for each of the computed five attributes, and identifying the adhesin and adhesin-like proteins having probability of being an adhesin ( $P_{ad}$ ) as  $\geq 0.51$ ; a computer system for performing the method; and genes and proteins encoding adhesin and adhesin-like proteins.



**Declaration under Rule 4.17:**

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

**Published:**

— *with international search report*

**(88) Date of publication of the international search report:**

27 April 2006

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*



# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IN2005/000037

A. CLASSIFICATION OF SUBJECT MATTER  
G06F19/00 G01N33/68

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
G06F G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EP0-Internal, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>ZUEGGE J ET AL: "Deciphering apicoplast targeting signals - feature extraction from nuclear-encoded precursors of Plasmodium falciparum apicoplast proteins" GENE: AN INTERNATIONAL JOURNAL ON GENES AND GENOMES, ELSEVIER, AMSTERDAM, NL, vol. 280, no. 1-2, 12 December 2001 (2001-12-12) , pages 19-26, XP004313161 ISSN: 0378-1119 the whole document</p> <p>----- -/--</p>	<p>1-13, 18-21</p>

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### ° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

11 November 2005

Date of mailing of the international search report

10.01.2006

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# INTERNATIONAL SEARCH REPORT

Int. Application No  
PCT/IN2005/000037

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	BRADLEY PHIL ET AL: "BETAWRAP: Successful prediction of parallel beta-helices from primary sequence reveals an association with many microbial pathogens " PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 98, no. 26, 18 December 2001 (2001-12-18) , pages 14819-14824, XP002350912 ISSN: 0027-8424 the whole document	1-13 , 18-21
A	FINLAY R BRETT ET AL: "Common themes in microbial pathogenicity revisited" MICROBIOLOGY AND MOLECULAR BIOLOGY REVIEWS, vol. 61, no. 2, 1997, pages 136-169, XP002350913 ISSN: 1092-2172 the whole document	1-13 , 18-21
P,X	SACHDEVA GAURAV ET AL: "SPAAN: a software program for prediction of adhesins and adhesin-like proteins using neural networks" BIOINFORMATICS (OXFORD), vol. 21, no. 4, 15 February 2005 (2005-02-15) , pages 483-491, XP002350914 ISSN: 1367-4803 the whole document	1-13 , 18-21
E	WO 2005/057464 A (COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH; BRAHMACHARI, SAMIR, KUM) 23 June 2005 (2005-06-23) the whole document	1-13 , 18-21

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IN2005/000037

## Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
  
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-13, 18-21

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

Invention 1: claims 1-13, 18-21

A computational method for identifying adhesin and adhesin-like proteins comprising the steps of claim 1.

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Invention 2-275: claim 14

A set of 274 annotated genes encoding adhesin and adhesin-like proteins, having seq. id nos. 385 to 658.

---

Invention 276-380: claim 15

A set of 105 hypothetical genes encoding adhesin and adhesin-like proteins, having seq. id nos. 659 to 763.

---

Invention 381-659: claim 16

A set of 279 annotated adhesin and adhesin-like proteins, having seq. id nos. 1 to 279.

---

Invention 660-764: claim 17

A set of 105 hypothetical adhesin and adhesin-like proteins, having seq. id nos. 280 to 384.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IN2005/000037

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2005057464 A	23-06-2005	US 2005136480 A1	23-06-2005